Market Stability Is Here

THE PAPER INDUSTRY will close another successful year fifty days hence. Although we note with considerable interest that market reviewers in general are loath to commit themselves to predictions for next year; yet, we in THE PAPER INDUSTRY fail to see any conditions confronting 1927 that should forbid our predicting as successful a year as 1926, and in all probability a more successful year.

First and foremost, we are coming into the close of the year with a record breaking stability in the Index Commodity Price. According to Irving Fisher, the Index Commodity Price on January 30, 1926, stood at 159.7, the year's high. From then on, it declined all during the spring and summer until it reached the year's low in the week of August 14th, when it stood at 147. The average for July was 149.6; for August, 147.6; for September, 148.3; and for October, 148.46, making the average for the four months, 148.5.

To those of us who watch this barometer of business and understand that it means a condition of stability in the commodity market, the like of which we have not seen since the War, it forecasts a greater stability in the coming months.

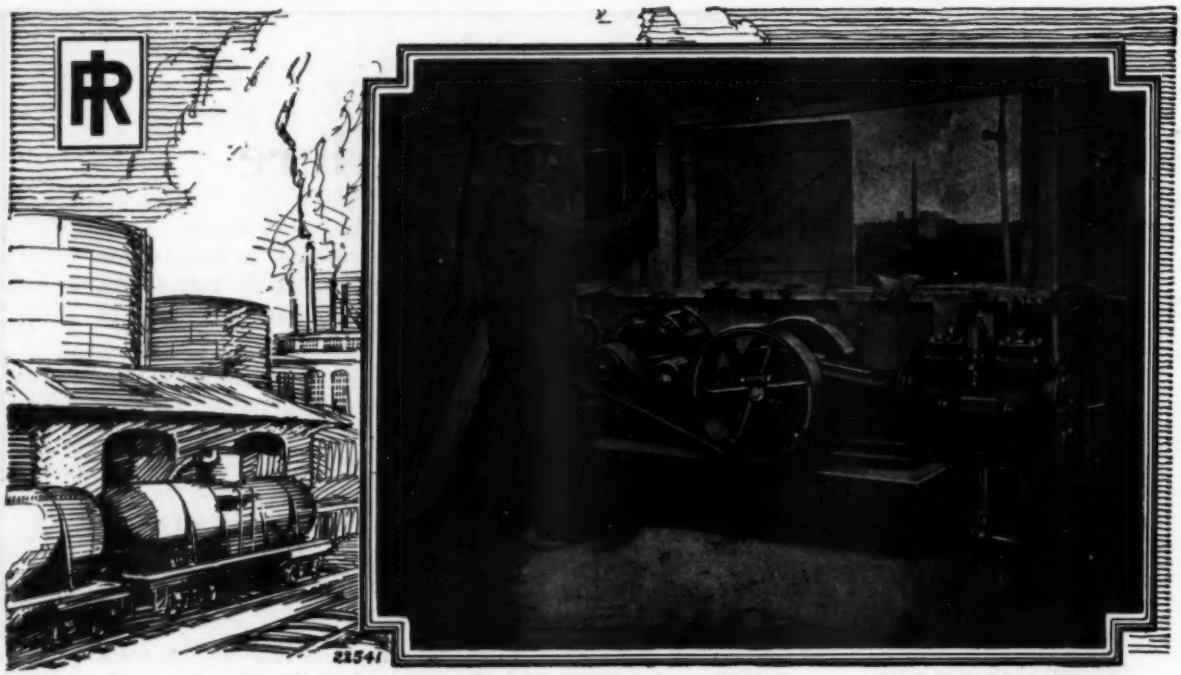
There is a variation of six and one-half points in the Index Number between the week ending August 14th and that ending November 6th. For the week ending November 6th, the Index Number stood at 153.5. At 147, it was too low. While the Index Number on the wages and the Index Number on the cost of living are standing firm with a substantial advance over the general commodity Index Number, there is every reason to predict a higher average stable price.

The significance of this stability lies in the fact that it breeds confidence. Consumers, retailers, wholesalers and manufacturers all hesitate to purchase their commodities when there are chances of wide fluctuations such as we had in the years following the War. But the days of those wide fluctuations have passed and the day of stability is here. Along with this comes the confidence of the buying public, and with that, will come the carrying of more stock because it can be done with safety and without fear of money lost on inventories on account of adverse fluctuations of price.

As a further proof of the fact that confidence is returning, we have to point to the enormous increase in the revenue freight carloadings. Never before in the history of America, have we had such record breaking carloadings as have been reported week by week this fall, nor have we had such a sustained large movement of general commodities by the railroads. For the week ending August 28th, 1925, 1,124,438 revenue cars were loaded by the railroads of the United States. For the corresponding week in 1926, the carloadings were 1,136,233, which was 12,000 more than the corresponding week of 1924. For the week ending September 4th, the carloadings were 1,151,346; September 18th, 1,187,011; September 25th, 1,182,940; October 2nd, 1,185,524; October 9th, 1,184,862; October 16th, 1,210,163; and for the week ending October 23rd, 1,209,043.

Here's the paradox. Since January 30th, 1926, the general trend of the commodity price has been downward and the volume of business has been increasing. In other words, without the stimulus of a rising market, the demand for commodities has increased unprecedently. Why? There are no stocks; the consumption of commodities is increasing; and no inventories of unsold goods are piling up anywhere.

It has taken three years to produce this liquid situation which is the strongest and healthiest that we have ever known in America. This static situation cannot be undone. It has crystallized. It is here to stay, and that is the reason we predict with confidence that this unprecedented movement of goods at a stable price will hold over during 1927.



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Let Us Give Thanks

NOVEMBER 25th has been set aside as the annual day for Thanksgiving this year. Each year at about this time, we are called upon by our President and others in authority to set aside one day to give thanks for the abundance of good things that we have received during the past twelve months.

America has been blessed, as no other nation in the world ever was blessed before, with all of the good things that our loving and beneficent Father can give us. We have had an abundance of good health, strength and prosperity. No nation in the world has ever been so rich as this one, nor commanded such a position among its neighbors. As a nation and individually, we spend more money in one month now than we did in a whole year not very long ago. Billions of dollars have been spent on luxuries, other billions have been loaned to foreign interests. Billions of new securities have been issued and all have been quickly absorbed.

Surely, as we face this situation, the like of which mankind has never before known in the annals of the human race, we should bow with reverence and awe at this season, with hearts overflowing with gratitude to Almighty God for His abundant blessings upon us and our land. In deepest humility, we should remember that every good and perfect gift comes from Him and realize that the boundless blessings with which our land has been crowned, if used only for the gratification of our own personal or national ambitions or desires, may not prove a blessing.

We should humbly remember in love and adoration to Him from whose hands these blessings come, that we are but stewards or trustees to administer the trust individually or nationally put upon us for the benefit of mankind, and for the advancement throughout the world of that divinely given prayer, "Thy kingdom come; Thy will be done on earth as it is in heaven."

Unless our wealth and strength is used for that purpose, with a heart full of gratitude, not only on this day of national Thanksgiving, but every day, and unless we try to the best of our ability to follow the Golden Rule, "Do unto others as you would that they should do unto you," we may finally be weighed in the balance and found wanting.

Developing the Booster Spirit

ONE of the marked indications of the growing spirit of co-operation and better relations between employer and employee in industry is the rapid growth of booster clubs. In manufacturing plants whose products are consumed largely in the immediate community, such booster clubs have as their objects giving publicity to the employer's product and building up good will.

Pulp and paper mills could not always organize booster clubs with these aims in view, since their products are generally marketed at distant points and seldom find outlet in the vicinity in which the mills are located.

However, a booster club in a slightly different sense—to more closely link the employer and employee and to strive for greater co-operation—could be very profitably organized by a paper mill. The spirit of the booster club will act as a tie to the employee, greatly increase loyalty, and develop the valuable "belonging" spirit.

For example, a booster club would be an immeasurable aid in an accident prevention campaign. The employees, imbued with team spirit, will guard against accidents, not as individuals but as a team. With such a spirit prevailing, success is inevitable.

It is hardly necessary to dwell on the advantages that would accrue to production with a strong booster club in an organization. Production could not help but be increased, costs lowered and conditions in general raised to a much higher level.

There is no secret formula for the development of a booster spirit among employees. It is a matter of educating the workers to have confidence in the management and to see their own position as industrial partners. If this is done, the employees will frequently express a voluntary request for the establishment of a booster club. Indeed, this should always be engineered, since the management can not take the initial step in the matter and expect the idea to spread through the rank and file of employees without needless and treacherous suspicion. Many clubs of this character fail when they are attempted without the proper groundwork.

Started properly, the booster club is organized by the employees, through co-operation with the management. Officers, such as chief booster, assistant chief, etc., are chosen and a spirit of co-operation begins to make itself felt.

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Vol. 8 NOVEMBER, 1926 No. 8

Interesting Pulp and Paper Laboratories of Europe

II—London and Paris—Papermaking Courses at Battersea Polytechnic; Research on Lignin in Chelsea; Papermaking Exhibits at the "Conservatoire National" in Paris

By LOUIS E. WISE, Ph. D.

Professor of Forest Chemistry in the New York State College of Forestry, at Syracuse University

IT WAS through my new-found friends of "Cross and Bevan" that I learned of the great Polytechnic in London which gave courses in papermaking. Battersea "Poly" is a remarkable institution, corresponding somewhat to Cooper Union in New York. It is one of several such schools that are hidden in various parts of London. Perhaps "hidden" is an inadequate term for the Battersea Polytechnic is located on Battersea Park Road (S. W. 11), within easy reach of several railroad stations, and is served by trams from Vauxhall, Westminster, Tooting, and other important sections of London.

The school seeks to give scientific and technical training to men and women, at a very nominal cost, and its facilities are adequate and modern. It has excellent laboratories, a very good reference library and a large athletic ground, at Merton. Some of the students of the Polytechnic attend daily classes. Some are research workers, candidates for higher degrees in the University of London. Others are practical men and women in responsible positions, for whom there are special evening classes.

I arrived at the Polytechnic at a rather awkward time. The institution was shut down for the summer; most of the laboratories were closed, and some of them were dismantled and in process of renovation. Furthermore, both students and instructors were "on holiday," but the Principal, Dr. R. H. Pickard, F. R. S., was at his desk, and was good enough to allow me to inspect the chemical engineering department, where the courses in pulp and papermaking are given.

A very obliging steward, Mr. Hall, showed me the laboratories, which from a chemical engineering standpoint were excellent—well equipped and beautifully lighted, but which contained very little pulp and papermaking equipment. What there was of it, was on a very small scale and used for demonstrational purposes only. It would be obviously unfair to describe this equipment as I saw it, for it had been taken down in part, and was not ready for operation. The photograph, taken when classes were in session, gives the reader a better idea of the papermaking equipment than could any description of mine.

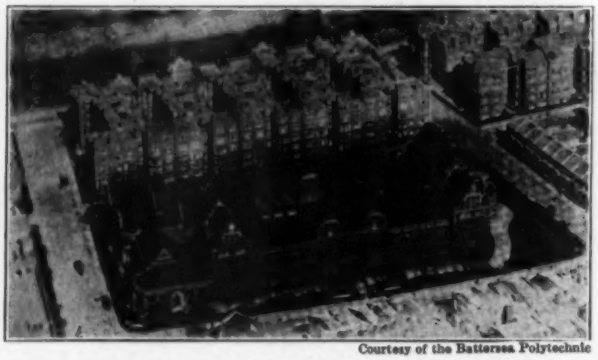
The paper testing apparatus, however, was very good. Although it had been stored for the summer, the obliging Mr. Hall trotted it out for me, and also furnished me with a photograph of the equipment in its natural habitat.

The courses in papermaking appeal largely to practical pulp and paper men, many of whom have had years of experience in the industry, and who are not enrolled for "a degree." The work covers the requirements laid down by the City and Guilds of the London Institute for Paper Manufacture. These give proper attention to the demands of the paper trade in general, as well as those of the wholesale stationer and the printer.

There are really two courses. One is a general brief course to meet the desires of those who want a panoramic view of the commercial processes used in papermaking, with special reference to the mechanical rather than the chemical features of the

subject. The other is a more comprehensive course, which deals especially with the manufacturing processes from the chemical standpoint, and which moreover emphasizes paper testing. It is this latter course which would appeal to the student of chemistry or chemical engineering and which, it is my understanding, such a student can elect in conjunction with the regular work which he may be taking toward a degree.

The first course, known as "Papermaking Engineering" is largely a synoptical, illustrated, lecture and demonstration course, punctuated with visits to neighboring papermills. It takes up the manufacture of wood pulp by the mechanical and the three chemical processes, and also discusses manufacturing processes as applied to rags, esparto, and bamboo.



Courtesy of the Battersea Polytechnic

The Battersea Polytechnic viewed from the air

The use of waste paper, soda recovery, bleaching, refining, mixing, etc., are discussed in the lectures. The principles of the fourdrinier, board, and M. G. machines, supercalenders, slitters, and rewinders are taken up, as well as the use of finishing machinery. The generation of steam and electrical power in the pulp and papermill, different types of drives, ventilation and heat economy are also lecture topics. General mill layout is outlined and discussed. The course ends with an examination which is arranged or visaed by the London City and Guilds.

The work in this course is given in the evening from 7:15 to 9:45, every Monday for 15 consecutive weeks, by Major R. Marx, M.C., who was out of the city, and whom I was unable to meet. It is well to note that the fee for the term, in the case of students living in the London area—i.e., London, Middlesex and Kent—is only 10 shillings.

The more complete course in paper testing, for which the Polytechnic is quite well equipped, except that it lacks a humidifier to regulate the moisture conditions of the laboratory in which the tests are made, is given by Mr. C. S. Harman. The work extends over a period of two years, and the fees for students in the metropolitan district is 1£ ($4.88) per annum.

In a series of introductory lectures, Mr. Harman takes up the various pulp making processes, more particularly from the chemical standpoint. Laboratory work supplements the lectures. The microsope is used in studying characteristics of papermaking fibers. Methods are given for the qualitative identification of fibrous constituents of paper and for the qualitative examination of sizing and loading materials. The physical properties of paper are quantitatively studied by the use of suitable testing instruments, shown in the accompanying photograph (Fig. 2).

In the second year, Mr. Harman takes up the "classification of the celluloses and their relative values" in papermaking. He discusses new papermaking raw materials. Besides this, he teaches the scientific control methods used in the paper industry. His laboratory course includes: the detection and quantitative estimation of different fibers used in the paper industry, and the quantitative estimation of sizing and loading materials. Special attention is also given to residual impurities in paper, their effect on the paper, and their detection. The use of dyestuffs employed in the industry is outlined. Mr. Harman also goes into some detail in discussing special papers, such as art papers, cheque papers, waterproof and grease-proof papers, parchments, cable papers, etc., all of which are manufactured in England.

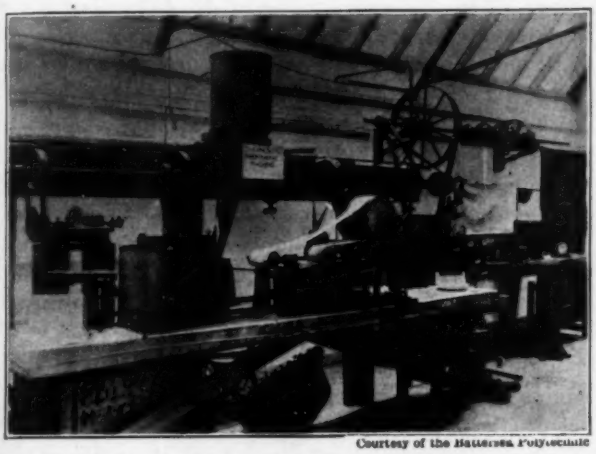
Mr. Hall informed me that some 50 men had taken papermaking work at the institute during the past year. Obviously, most of these men have had no fundamental training in the physical sciences, or in mathematics, and in my opinion this lack must present some unusual difficulties to the teacher. The courses must remain entirely vocational. However, they can serve and undoubtedly do serve to broaden the horizon of these practical men, and to bring them into touch with phases of the paper industry with which they are entirely unfamiliar, and they serve further to stimulate their interest and increase their capacity in their own work. It is to be expected that the men also learn a great deal from contacts with each other. This must be especially true of those few embryo chemists or engineers, who take these courses in papermaking in order to get a bird's-eye view of the industry. They have the privilege of meeting some of the older men, who are actually tackling the problems of papermaking, or paper selling, in their daily lives.

The Chelsea Polytechnic

I left the Polytechnic at Battersea rather hastily, cutting across Battersea Park and over Albert Bridge, to pay a flying visit to the Chelsea Polytechnic. This is an institution of the same general nature as the Battersea, but which gives no courses in pulp and papermaking. However, it has on its faculty a man who is intensely interested in the chemistry of waste sulphite liquors, Dr. Charles Dorée, a former collaborator with Mr. Cross, the

famous paper technologist, and a man whom I was most anxious to meet before he left for his vacation in Switzerland.

The reader may recall in an earlier article, that reference was made to the less drastic sulphite method of Cross and Englestad, and to the interesting sulphite liquor, which Mr. Cross kept bottled in his laboratories in New Court. Dr. Dorée has chosen the very difficult task of isolating and attempting to



Courtesy of the Battersea Polytechnic

Papermaking equipment at the Battersea Polytechnic—London

study the constitution of the lignosulphonic acid present in this liquor—a task which can only be appreciated by a chemist who has been baffled and discouraged by investigating the components of wood. Dr. Dorée and his colleagues have been working on this problem for some time and with interesting results.

I had a delightful though hurried interview with Dr. Dorée. He is a pleasant, scholarly gentleman of middle age, who is interested in the purely scientific, rather than the practical phases of pulp making. We had a little discussion regarding lignin—Dr. Dorée contending that it was chemically combined with the cellulose in wood, and I leaning towards the view, based on the work of the U. S. Forest Products Laboratory, that lignin was chemically separate and distinct from the cellulose. Both of us, as well as a young botanist, co-worker with Dorée who joined the discussion, agreed that the true nature of lignin and its relation to cellulose were still open questions, awaiting further investigations.

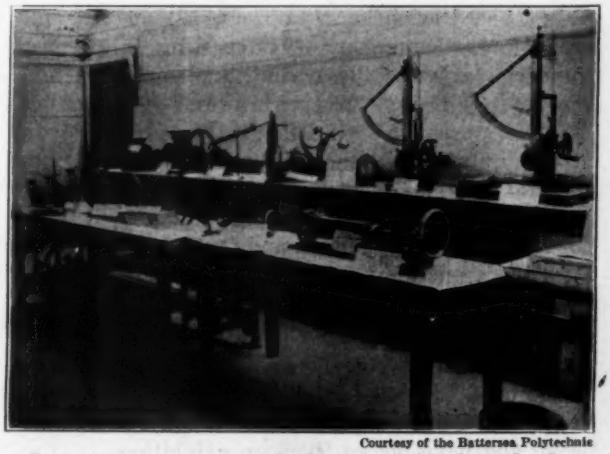
Why then mention lignin at all? Why even dwell on the scientific work of Dorée, so far removed, apparently, from the practical problems of the mill? The practical-minded reader must bear in mind that this lignin, which fascinates Dr. Dorée so greatly, forms 20-30 per cent of the dry weight of all woods used in papermaking. He must also recall that this lignin is practically a dead loss in all of the chemical processes used in making pulp. It is the "weak sister" of the raw materials of the paper industry. Will it ever be of any value to that industry? Can it ever be salvaged and turned to practical account?

It is only by intensively studying the chemistry of this complex substance or mixture of substances, that we can arrive at an intelligent utilization of lignin and its derivatives, the lignosulphonic acids. It is this type of study which Dr. Dorée and his students are carrying out at Chelsea, in the heart of London, and it is this type of detached, purely scientific work which will determine the future industrial status of lignin.

The Conservatoire National in Paris

It is quite a leap from the modern research laboratories of Chelsea to the old Conservatoire National des Arts et Metiers, in the ancient Rue St. Martin of Paris. However, the writer feels himself justified in taking this hazardous jump, and in giving a very brief description of this remarkable landmark which offers so much of interest to the papermaker.

A word first about the conservatoire. Like all Parisian public buildings, it has a long and interesting history, which synchronizes with the political changes and upheaveals of France. The site of the present museum was that of an old priory, founded in 1060 by Henry I. The restored and enlarged church and cloisters are still integral parts of the institution. It is noteworthy that the great Cardinal Richelieu was one of the priors, and that much later during the French Revolution, the priory became an educational institution and later a small-arms factory. The famous convention decreed in 1794 that the Priory of St. Martin des Champs should become



Courtesy of the Battersea Polytechnic

Paper testing apparatus at the Battersea Polytechnic—London

the Conservatoire National des Arts et Metiers (The National Museum of Arts and Trades), and such it has remained since 1798.

I cannot begin to describe the intricacies of this enormous old place, located in one of the poorest quarters of Paris with its vast courtyards and corridors, its amphitheatres, lecture rooms, and research laboratories, its magnificent sculptural work and its large exhibition rooms. The reader must

picture for himself, this colossal structure, blackened with age, having only two upper floors and spreading itself over the better part of a great city block in one of the dingiest neighborhoods of Paris.

In this labyrinth of buildings, we find rooms devoted to mining, metallurgy, agriculture, industrial hygiene; to building materials; to astronomy and physics; to weights and measures; to mechanical engineering; to ceramics and glass—to what not! We are not surprised therefor to find, in rooms 39 and 53, an exhibit of pulp and papermaking machinery, of designs for pulp and paper mill equipment, and of interesting paper samples from various parts of Europe and Asia. A pilgrimage to the exhibit well repays the visitor. He finds perfect miniature models of paper machines, several of which are of historical interest, and which have been museum pieces for over a century. He finds beautiful little models of rotary digesters, an exquisite miniature sulphite digester, and a number of other pieces of pulp and paper mill equipment. These are not crude models, built for the purpose of illustrating simply the principle of the invention. They are highly perfected replicas, carefully finished bits of mechanism—all parts complete—often the work of a M. Digeon, who, in his day, must have been a master mechanic of the first water.

Then, too, the visitor finds some interesting hand moulds, which date back to 1785, and some of which were used in producing the watermarked 1000 Franc "assignat" notes used in the balmy days of Louis XVI, who lost his head during the Terror following the French Revolution. In room 53, he (the pilgrim) finds a number of interesting mechanical drawings—a series illustrating the paper machine by Robert, designs for calenders, evaporators, bleaching systems, etc. Besides these, he discovers an exhibit of paper samples, which, while a trifle superannuated and dusty, is still interesting—watermarked papers dating back to Johannot in 1811, English, Russian, Japanese, and Corean papers, various papers made from esparto and bamboo, and a multitude of others.

A much more modern and interesting exhibit is that of the paper "thread and cloth," that unusual textile used by the Germans during the war. The French have collected numerous samples of this material, and have placed them on exhibition.

Anselme Payen

While browsing through the galleries of the conservatoire, I found myself quite unexpectedly opposite the bust of a modest French chemist, whose numerous researches, carried out some ninety years ago, certainly influenced the development of the chemical pulp industry. Anselme Payen, member of the Institute of France, professor at the conservatoire in 1839, despite his hundred and seventy-odd scientific papers, is no longer very well known today. Few of the present generation of chemists outside of France know his work, but I have no compunction about introducing him to the papermaking fraternity, for he discovered that cellulose was an important component of all plant fibers that came under his observation. He found that in all of the woods which he examined there was one substance, which he termed cellulose, that defied chemical attack—on the part of dilute acids, alkalies and bleaching agents. This discovery undoubtedly influenced further investigations on the use of wood as a raw material in chemical pulp manufacture, the practical realization of which came much later, since cellulose is the principal component of all types of chemical wood pulp. Payen's work should therefore be of real historical interest to the paper industry of today.

I thought of this as I stood in silent admiration before Payen's marble bust, with its face clean-shaven save for the ragged side-burns, its furrowed brows above fine, deep-set eyes and its thin drawn lips with their humorous quirks at the corners. I thought, not only of the genius of Payen, but of the genius of the French people, which saves its pure scientists and its modest discoverers from oblivion by placing permanent monuments in their honor on the highways and in the by-ways of France.

Power Plants Are Improving

IN A paper recently read before the American Society of Mechanical Engineers, an engineer connected with a large power company stated that it is possible to design and operate modern power stations in such a way that the "ultimate efficiency will be within 5 per cent of the combined efficiency of its component equipment working at most economical load."

He also says that "banking losses of a pulverized fuel station operating at 65 per cent load factor may be limited to 2 per cent."

He gives a specific instance where, with powdered coal whose heat value was 13,691 B.t.u. per pound, 12,544 B.t.u.'s were absorbed by the boiler. In other words, 91.6 per cent of the heat in the coal was absorbed by the boiler, economizer and superheater.

Summarized, this means that boiler efficiencies are going up; efficiencies should be good even at low load; and, banking losses are approaching zero. We can stand more improvement of this sort.

—Schaphorst.

Dr. Charles H. Herty, past president of the American Chemical Society, said recently: "It requires no stretch of imagination to perceive that we are gradually passing from the coal tar to the cellulose period in synthetic organic chemistry."

Lessons in Paper Making

Lesson VI—Wet Felts and Their Handling

By HARRY WILLIAMSON
Class Instructor, Champion Fibre Co.

"FAMILIARITY breeds contempt," and with years of experience behind us we are apt to forget that what is simple to us is really confusing to the beginner.

This fact was brought home to the writer the other day while putting on a first felt. After the felt was on, the fourth hand who has only worked in the mill ten months remarked, "Gee, a fellow has to know his stuff to put a felt on."

The boy was confused by the number of rolls and after the old felt had been removed he could not remember which rolls were inside the felt and which outside.

There are many designs of presses in vogue, depending on the length of felt to be used and the space available. Also, most machines carry two straight line presses and one reverse.

It is therefore difficult to lay down hard and fast rules as to the method of putting on felts. We will therefore deal with the most complicated design of press, a first felt with four tail rolls and two hitch rolls.

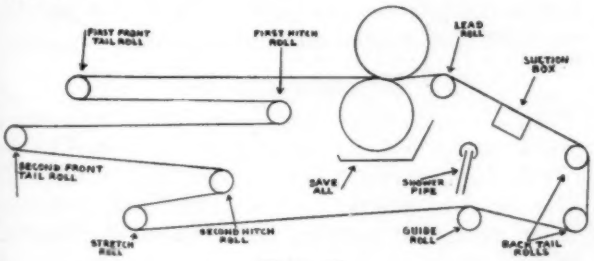


Figure 25

INSIDE THE FELT	*OUTSIDE THE FELT*
Bottom Press Roll	*Top Press Roll*
Save All	*Guide Roll*
Lead Roll	*Felt Cleaner's*
Suction Box	*All Hitch Rolls*
Shower Pipe	
All Tail Rolls	

While we want to put the new felt on with all possible speed, it is well to remember that felts are easily injured, and a damaged felt will double its own cost during its life. Therefore, while using speed, **be careful.**

Procedure

Have your equipment and tools opposite the press. Keep the new felt in its wrappings near the dryers, out of the way until you are ready for it.

While the machine tender is shutting down, the back tender can run the old felt with weights and levers still on, and the shower turned on.

Using the hose pipe generously, he can clean off the hard stock lumps from the felt rolls, press doctor and crumb doctor. This eliminates a possible source of injury to the new felt.

He can then shut off the shower and dry out the old felt while disconnecting the shower pipe, press roll, water bearing connections and suction box. If the felt rolls have open bearings, he can remove the grease from the front side boxes, saving it to use again.

Everything being clean and therefore **safe,** we can stop the press and cut the felt across its width in front of the top roll.

Folding the felt back over the top press roll, we can run the press gently until the felt is rolled up on the doctor ready to be removed.

Working front and back side, the third and fourth hand remove the levers and weights and raise the top press roll about three inches.

The wooden save-all is a cumbersome object to either remove or hold up safely for any length of time, and there is not much space between the save-all end and the inside of the frame to pull the felt through.

A good time and labor saver is to have eye bolts screwed into the save-all and a rope with snap catches, just the right length to fit round the water ring of the bottom press roll, taking the weight of the save-all **after it has been lifted to contact with the bottom press roll.** Then when the bottom press roll is raised, the save-all will lift with it.

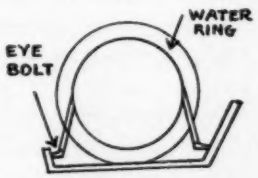


Figure 26

We are now ready to open up the new felt and bring it forward, and our first job in this connection is to see that the floor is clean and all dryer spears are out of the way.

When cutting the strings from the wrappings and felt, press the felt away from the blade of the knife and cut **up** away from the felt.

There is a right way and a wrong way to put on a felt. The raised **nap** of the felt must smooth **back** as the felt enters the press. Most felts have an arrow showing the direction of travel, but it is just as well to get into the habit of making doubly sure by **stroking the nap of the felt.**

Open out the felt then on the floor, in line with the machine, the same way it will run on the machine, with the seam showing on the top side about three quarters up the length of the felt. **(Fig. 27.)**

The backtender taking the end nearest the seam and the machine tender the other end, the crew supporting the middle, pick up the felt and carry it

Figure 27

into the press pit laying it over the stretch roll and guide roll with the seam in line directly under the bottom press roll.

The important point to observe is that **the felt is still lying the same way it will run when on the machine and is not twisted.**

By means of the sling and crane, raise the bottom press roll and save-all and clean off the frame.

As second in command on the machine, the backtender stays in the press pit, and as each roll is lifted, he passes to the machine tender the **back edge** of the felt, so that the felt may be gently drawn round the end of each roll.

With the seam as a guide, the back edge of the top side of the felt is passed between the end of the save-all and the inside of the frame and the felt drawn through until it is round the press roll journal.

Lower the press roll in place and see that the **dowel pin** fits in the socket. Remove the sling and put the top side of the felt between the press rolls. **Feel the nap of the felt again and make sure the felt is on the right way.**

The next roll to handle is the lead roll immediately behind the press nip. Raise the roll and pass the back edge of the top side of the felt around the journal until the whole top side is laying on the roll.

Working towards the wire, pass the felt round the suction box and replace the shower pipe.

The tail rolls nearest the wire are next and in

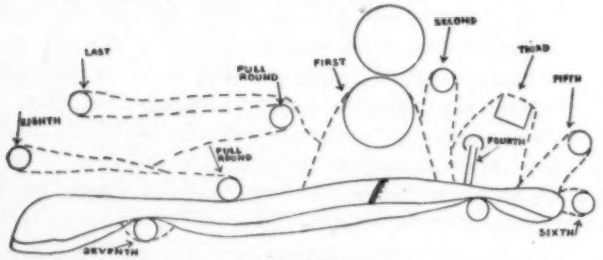


Figure 28

handling these rolls, be sure the crane is directly over the rolls. If we do not get a straight lift, the roll is liable to swing and strike the wire.

Working forward of the press, the felt is next put on the stretch roll.

The second hitch roll is an outside roll, the felt is not put on it, but pulled **round** it to its partner the second front tail roll. This is an inside roll and it is raised and the felt put **on** it.

The first hitch roll is also an outside roll and the same procedure is followed. Pull the felt **round** it to its partner the first front tail roll. This roll must be picked up by the middle and lifted clear of both bearings.

Swing the front side of the roll towards the press and pass the felt round it. Lay the roll on the frame and pull the felt out to its full width over all the rolls and press. Replace the tail roll in its bearings.

Connect the water bearings on the press rolls and **turn** the water on.

Connect the shower pipe, guide strap and suction box.

Be sure that all dowel pins and holding bolts are in place.

Lower the top press roll and be sure the Jacks are clear of the pivot arm.

Do not put the weights and levers on until after the felt has been shrunk and straightened out.

During the whole process of putting on the felt, the backtender being inside the press pit, can help considerably by seeing the felt does not get caught or hung up. Also after a felt roll has been lifted clear of the bearing, and he has passed the back edge of the felt to the machine tender, he can place his hand round the end of the roll journal.

The felt will slide safely and much more easily round the smooth flesh of his hand than round a possible sharp burr on the metal journal. If for any reason the felt seems to be hung up, **do not pull,** investigate and find out what the trouble is.

Shrinking the Felt

Despite the utmost care, grease spots sometimes get into the new felt while putting it on. These should be gotten out before shrinking the felt, or else the area covered by grease will not shrink as much as the surrounding felt, thus causing **a slack spot.**

To take out the grease, apply kerosene moderately and rub vigorously with the fingers. **Do not use a wire brush.**

Very much depends on the correct shrinkage of the felt. The felt manufacturers are very careful when spinning and weaving the yarn to keep a correct temperature. This is done so that each thread shall have the same amount of tensile stretch and elasticity.

By carelessness in shrinking, we can nullify all their efforts and give ourselves a felt to run which will give considerable trouble by wrinkling. The two vital points to observe are:

(1) The felt must be **slack** and not under tension when the water is applied.

(2) Every thread of the felt must get an even volume of water applied to it.

With the stretch roll well back, and the felt opened out to its full width, start the press running slowly. Turn on the shower just enough to deliver an even

spray of water over the width of the felt. The felt will probably overhang a little, therefore push the edges of the felt onto the face of the press roll so they will also get the benefit of the water.

As the felt gets thoroughly soaked, gradually increase the pressure on the shower until full pressure is on.

Do not attempt to use a hose pipe on the felt during the sprinkling process.

For quick working, the felt can then either be roped up and run awhile, or turned over.

In the first case, the felt is thoroughly worked and this helps to prevent blowing when starting up. Turning over has the same effect in a greater degree, and also by putting the long felt nap away from the paper, there is less danger of the felt becoming plastered with nodules of stock.

By turning the felt over, however, the long nap must come in contact with the stationary suction box and there is consequently a greater loss of this valuable felt fiber during the first day's run.

There are many who do not care to either rope up or turn over a new felt, preferring to shrink the felt up while keeping it pulled out. This method takes up a lot of time because if the paper is put on too soon, the felt will be liable to run into a straight wrinkle.

Whichever method is best, must be decided by the superintendent in charge. The guiding point is that **the felt is there to produce saleable paper,** and the overhead cost goes on all the time.

Suction Boxes

There are many types of suction boxes used. Each have their good points and all of them have, from **the life of felt** point of view, the bad point of wearing the felt.

This bad point is sometimes considerably overstressed. Any stationary object against which the felt must rub, and in the case of suction boxes, with the added resistance of atmospheric pressure, must of necessity wear the felt.

However, the life of the felt should not be discussed solely in terms of **days run,** but also in **tons of paper produced.**

If the quality of stock run demands a suction box which wears the felt more in order to run at the speed desired, then that suction box should be used.

While felts must be conserved and made to produce to their utmost capacity, that capacity should be carefully observed in each mill, so that a minimum and maximum service will be arrived at without unnecessary loss of paper.

Not only in breaks caused by worn felts, but also in culled paper due to worn streaks and extra steam to evaporate water which should have been pressed out, the cost mounts up until it is no longer profitable to run the felt, and a good jack knife is the only remedy.

The primary function of the felt is to pass through it the water squeezed from the paper. To do this effectively, the mesh of the felt must be kept open and clean as it passes through the press rolls.

The duty of the suction box is to remove water from the felt, air from between the felt and paper, water from the paper, and present the felt to the press nip clean and open, ready to receive the water pressed from the paper.

One of the chief difficulties with the felt suction box is to get an even distribution of suction. There is, relatively speaking, a very small volume of water passing through the box and this water contains much solid matter in the form of fibre, slime, and the wearings of wool from the felt.

The movement of this matter inside the box becomes increasingly sluggish even to the point of filling up those parts of the box farthest from the pump connection.

This point of connection is therefore of importance. If it is at the back side of the box, the front end will gradually fill up and the effect of the suction will be less at the front side than the back side. If it is in the center, the suction, unless throttled by a perforated baffle plate, will be too strong in the center, thus tending to hold the felt and paper back.

The writer favors a center connection with a graduated baffle plate.

In this case, the holes should be larger at the ends

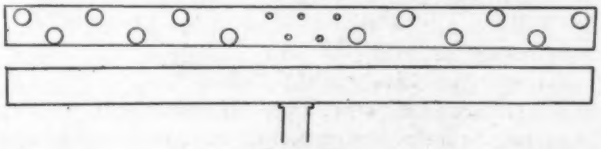


Figure 29

than at the center, and the edges of each hole should be rounded smooth to prevent the accumulation of solid matter. (Fig. 29.)

The Herring Bone Type

Where high speed and high water removal is of paramount importance, and close formation of the paper, such as news or kraft, is of secondary importance, the herring bone type of box cover is very useful. (Fig. 30.)

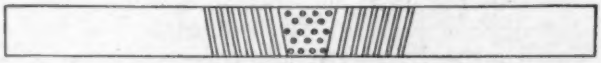


Figure 30

This box most certainly opens up the felt, depending on the degree of angle at which the slots are arranged.

The more acute the angle, the greater the spreading action. It must also be remembered that the paper comes under the same spreading influence; in fact, by increasing the suction, it is possible to gain half an inch of deckle.

The edges of the angled slots must be sandpapered smooth or else they will wear the felt excessively.

The same type of box cover can be used in a more modified form by reducing the width of the suction area. (Fig. 31.)

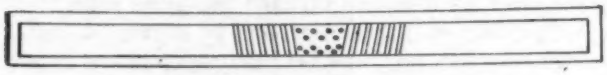


Figure 31

The Open Type

The straight open mouth type of box cover has no spreading action on the felt and therefore is not quite so hard in its wearing action. (Fig. 32.)

It is a very useful box on medium speeds where closer formation of the sheet is desired, and rapid water removal by the felt is not quite so necessary.

Should excessive suction be applied however, the felt and paper are drawn too far down into the box causing strain to both and a tendency to blow as the paper passes the forward lip of the box.

Figure 32

The open mouth box can be used in still another manner. By having the opening straight in the center and dropping back on an angle to the edges, the spreading principle is again introduced yet not quite so violent on the warp threads as the Herring bone type. (Fig. 33)

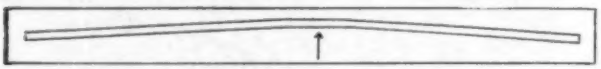


Figure 33

There are many other types of boxes, each making various claims. The principal requirements in any box however are: **An evenly applied suction, no sharp corners, no rough spots; easy on the felt, consistent with maintaining adequate production of the quality of paper desired.**

The Tale of the Alaskan Spruce

By B. T. McBAIN

NOT many centuries ago, the ice fields of the far North extended down and over that part of America's richest timber possession, now known as Alaska. The great glaciers still remaining are receding from year to year, and while now two or three of them can be reached from Juneau, within a few years they will be many miles inland, reached probably only by auto, or other means of transportation so rapidly being added to the pleasures of that district.

The nearer one gets to the glaciers, the younger and smaller the spruce and other pulp trees, showing beyond a doubt that as they receded the winds have immediately seeded the new territory to a crop of usefulness.

We hear of the blue spruce of the Eastern United States, but most of the people who at one time owned blue spruce forests in the East, are now blue themselves because of the great waste in the cutting of the forests, and in the manufacture of the lumber in bygone days.

Time and necessity have moved the world westward—it has always been so since time began, and will be so until eternity.

As the western world moved westward, the spruce of the Middle West became available; it, too, in a large measure was wasted; it, too, is almost a thing of the past.

To the Far West the movement was on. The Pacific states of Oregon and Washington were pioneered in the early 1890's by the pulp and paper fraternity, but quietly and without much publicity. It has only been of recent years that the truth and real facts, regarding the spruce, and fir woods of these two great states have become public property.

When Uncle Sam acts, he does so intelligently. He surveyed the whole northwest country and while doing so took note of the natural resources. Bulletin 1241, published by the Department of Agriculture in connection with the Forestry Division tells many truths. Half of the timber wealth of the nation remains in these two states and in Alaska.

The pulp and paper making world must soon look to Alaska for a great part of its white paper supply.

The woods of Alaska are not many—practically only two—spruce and hemlock. These two species amount to 98 per cent of the total, some 90 or more billions of feet. One might say a solid block of pulp wood in just about the right proportions and running from 40 to 100 cords per acre; clear, clean, tall, straight, close-grained and wonderful pulp wood.

The Alaskan spruce is called Sitka spruce, but there is more of it and of better quality east of Sitka than immediately surrounding that port.

The Alaskan spruce was born for a future supply for the paper making world. It grows in a district with very heavy rainfall and very few forms of pestilence. Even fire is almost an unknown factor in that region, the best conditions for perpetuity.

But what is best is that Uncle Sam owns the timber and will not sell it. Uncle Sam intends making Alaska a timber garden spot of the future for all generations. He will sell the crop as it ripens and as it is needed, but only as fast as it can be used, and used in Alaskan pulp and paper mills.

There are water powers on almost every large island, some naturally better than others. These have been surveyed, and run-off records have been kept for many years. What can be done with them is known; it is not a guess. The records show facts, not guesses.

I have been there; I have seen; I have learned for myself, having visited the power sites; having seen the records and maps; having learned to know Alaskan spruce and to appreciate this newest of American possessions; this most valuable of all our National resources and assets—paper for the future.

Handling Mill Visitors

Suggestions for Paper Plant Executives

By S. K. HARGIS

WHILE the visitor problem in many of the smaller paper mills is not an acute one, it is getting to be one in many of the larger mills, especially those located in or near centers of population.

The production of paper stock along modern lines has much to interest the lay-man and lay-woman,—and the question is how to handle them with the greatest convenience and with the best results.

This is especially necessary when group visitors are under consideration, such as college students, high school pupils, associations, clubs and tourists.

Many of the larger mills have been systematically encouraging visitors for many years in the belief that it furnishes a certain amount of advertising and publicity. But the result probably will not compensate for the bother and trouble unless some sort of rules are laid down and strictly adhered to at all times.

Without doubt, a liberal visitor policy in the larger paper mills has done much good to the industry in general, whatever value it has had for the individual plant in particular. There is a tremendous amount to see in the modern paper mill which is educational and informative and which can be made clear to the lay-man even on a casual sightseeing trip over the property.

There are, roughly, three groups of visitors that the mill has to contend with: (a) visitors connected with the industry, paper house men, printers, etc.; (b) group visitors, such as clubs, students, pupils, associations and tourists; (c) casual, individual visitors.

Regular Routing Saves Time

No matter what types of visitors are in hand, it has been found both time saving and to be greatly more effective to establish regular routings through the mill. Even though the mill have as few as 50 visitors a week, it is a good idea to require registration. Registry of all visitors giving the business, address and purpose of the visit enables the mill management to keep track of the people who investigate its properties. In one large New England mill, routings through the property of people connected with the paper industries are different from that used when the man in the street is involved. Greater technical detail is gone into and special processes which might be of special interest are made clear to those connected with the trade.

The routing for casual visitors and groups is timed and gives only a general idea of the various functions of the departments and the working of machinery.

Attendants delegated to conduct visitors through the paper mill have to be given careful instructions. A routing is supplied together with brief notations as to explanations, etc.

The following rules are placed in the reception room for the benefit of all visitors:

a—Visitors shall pass through the mill only with the attendant.

b—Visitors shall not talk to operatives on duty.

c—The visiting time is strictly limited.

Many large industries are considering the addition of motion picture exhibits in connection with plant visitors, the film being shown prior to the trip through the property in order to save time and to prevent the asking of innumerable questions while enroute. The stereopticon also serves in this manner.

In some of the New England plants, visitors are sent out in groups on a time schedule which cuts down the number of trips and causes less disturbance in departments where there is activity.

In the main, paper mill executives see in visitors a first class method of getting desirable publicity providing the thing is held well within control. In some cases, printed notices are sent to institutions inviting selected groups to make the trip through.

By controlling the routings of the visitors, the mill is able to protect certain of its methods and processes from becoming widely known. Persons with possible ulterior motives can be barred out or at least shut off from confidential processes by such control.

The chief value of encouraging visitors lies in the habit of such visitors talking of their visit afterwards which means that one visitor will serve to acquaint maybe a hundred with the mill and its product.

It is a prime instigator of word of mouth publicity which many large industries prize highly.

The custom that holds good in certain industries—to restrict the hours when visitors will be accommodated or to restrict the days when they may have entry,—has not been entirely successful. Usually these precautions are taken in a way that makes the crowds on visitors' day too heavy to handle with efficiency. To restrict the hours but not the day has been found to be the most successful method of handling the matter.

Some Classes More Desirable

To some extent, the types of visitors at the paper mill are desirable or less desirable depending upon their vocations. Many of the large mills in encouraging visitors prefer college students and groups of

business men in the belief that the potential value of the advertising in this case is very much greater than, for instance, would be the members of a local women's club.

It has been found to control this to some extent by the special invitation system.

Many of the most interesting of the paper mills are too far removed from the larger cities to get the number of visitors they deserve or could get if they were located elsewhere. In the New England territory the number of visitors that appear at the large mills has on occasion run well into the hundreds.

There is a tremendous interest these days among the younger generations to study the inside workings of large industries and many colleges include visits to selected industrial plants in their special courses. The paper industry stands near the top of the list in selecting institutions which will have the greatest educational value for the college man and college woman.

There always has been a keen interest in paper making among people in general and it furnishes one of the most interesting of all industrial activities to the average person.

Few people have any adequate notion of how paper is manufactured; in fact, there is a lot of erroneous information current among people who know nothing of the facts.

Dividends and Deals Not Taxable

Examples of Legal Methods to Forestall Tax Payments

By M. P. SMOW
Public Accountant and Tax Consultant

THERE are certain kinds of dividends on which you do not have to pay a tax, contrary to the belief of many people that they have to pay a tax on every kind of dividend.

One of the best known forms of dividend which is non-taxable is the stock dividend. For a time the United States tax administration did attempt to tax the stock dividend, but the Supreme Court of the United States has declared that the stock dividend is non-taxable. This finding of the Supreme Court came after one of the hardest-fought battles in tax history.

It was contended by the Federal tax bureau of the Treasury Department that a stock dividend is taxable income to an individual. The Supreme Court ruled differently, pointing out that a man is no better off after receipt of a stock dividend than he was before. In other words, the stock he held before the dividend was issued was worth just as much before the issue as the stock and the stock dividend are worth after the issue. The marketable price of the security depends on the company's condition. If there is enough money for the stock dividend, then the value of that proposed stock dividend will remain in the original stock until issuance of the dividend. At that time the original stock and the dividend will equal the value of the old stock at the time the dividend was declared. Actually, there is no gain to the stockholder until the sale takes place. He is not one whit better off, so far as income to him is concerned.

As an example, if you own a share of stock which cost you $100.00, and it is worth $200.00 on the market, you are in no way benefited, so far as actual increase in value is concerned, when the value of the first stock is reduced by the issuance of a stock dividend of 100 per cent. Where before you had one share of stock worth $200.00, you now have two shares of stock worth $100.00 each.

A liquidating dividend is taxable only to the extent that it exceeds the cost or the March 1, 1913, value of the stock.

A dividend issued out of earnings or profit accumulated before March, 1913, is not taxable. In determining whether a distribution is made out of earnings of profits accumulated after or before this date, due consideration is to be given to the facts and the mere book entries or decreases to surplus will not be conclusive.

Legal Transactions for Minimum Tax

The question of the various kinds of dividends, and particularly the stock dividends, brings up a matter that plainly has bothered taxpayers ever since the income tax laws began. Business men have felt some doubt right along as to whether it was legally correct to handle their transactions in such a way as to pay a minimum tax. They have known of the heavy penalties, fines, and in some cases even imprisonment for fraudulent or wilful mishandling of their tax matters. There are penalties for delinquency in filing tax returns, for wilfully refusing to file, for not reporting all the income, and people have naturally wondered whether anything could be done to them for putting through their deals in such a way as to pay the minimum amount of tax, or no tax.

Fortunately there have been quite a few rulings in connection with this matter.

One of the most interesting and valuable ones is that made by the United States Board of Tax Appeals in the case of a business man living in New Jersey.

This man was a wealthy owner of stock in a manufacturing concern. He transferred all his stock to his wife by gift. He endorsed and delivered to her practically all of the stock certificates he held in this particular company, reserving to himself just one share. Then certificates of stock were issued by the company to his wife. An assignment of the stock was at the same time executed by him to his wife.

A short time later, the wife of this taxpayer entered into an agreement with another concern for sale of this stock and interest in the concern. The stock was duly paid for and the wife invested her money and has ever since retained the money or the investments or reinvestments into which the payments were converted.

Then the tax bureau came along to make an audit of the husband's return. It asserted that he derived a profit from the sale of the stock by his wife. The case came before the United States Board of Tax Appeals. The Board overruled the tax bureau. Its opinion is most interesting, and I am showing a part of it here:

"In cases of this type, all of the circumstances surrounding the questioned transaction are and should be subject to the closest scrutiny. It is difficult indeed to distinguish between cases where the parties have acted in good faith and cases where they have not acted in good faith. This difficulty is due to the close relationship of the parties and to the fact that they may have had verbal agreements or understandings which are unknown to the Commissioner and which they refuse to disclose on the witness stand.

"Such cases arouse a suspicion as to the bona fides of the transaction. That is the case here. The entire record in this appeal has been examined and analyzed with unusual care by every member of the Board. We have tested it from every angle which the record will permit and we find therein nothing to warrant us in holding that the transfer of the stock by this taxpayer to his wife was not a bona fide gift, vesting in her unconditionally every right of title and ownership which the taxpayer had.

"It was not a gift of the proceeds of the sale. No contract was made by the taxpayer for the sale of this stock. The sale was made pursuant to a contract between the wife and the corporation.

"Upon the issue presented, we must find for the taxpayer."

Another case decided on by the United States Board of Tax Appeals is that of an individual in Missouri who transferred property to his wife. This is a case where an oil-well contractor assigned certain property to his wife and then acted in her behalf in negotiating for the sale of this property. The proceeds in this case were received and retained by her. The Board states in this decision that "the evidence also establishes that the assignment was a bona fide assignment and that while the husband conducted the negotiations for the sale of the property, he was acting on behalf of his wife who was not familiar with such business, and that the proceeds were received and kept by her." The Board has ruled in this case that there is no tax to the husband because of the sale.

Two business men in Alabama owned all the stock of a certain corporation. Prior to the dissolution of this concern, each of the individuals transferred half of his stock to his wife. The Board held, on the evidence, that the transfers were bona fide gifts and that no profit was realized by the wives upon the subsequent dissolution of the corporation or the sale by them of their interest in the property received on such dissolution.

This point of dissolution brings up another very interesting one.

Where a corporation has an opportunity to sell at a considerable profit, it is better in many instances to dissolve the corporation first, permitting the stock to return to the stockholders. Then let the stockholders make the sale. This saves the possibility of a double tax—one on the corporation and one on the individuals.

Case of Not Reporting Upheld

A scare is frequently given taxpayers by the claim on the part of the tax bureau that because they have failed to report certain income in cases similar to those just cited that they are guilty of wilful, false, and fraudulent intent to avoid the tax. An individual in Michigan was faced with such a situation. He had made an absolute gift of the stock prior to the date on which the sale of it took place and before any offer to purchase the stock had been made and before he had attempted to sell his stock himself. According to the Board, the evidence in this case shows further that some weeks before the date of the actual delivery of the stock, this man informed the donee of his intention to make the gift.

The Commissioner of Internal Revenue, representing the tax bureau, contended that the taxpayer knew that the stock was to be sold and that negotiations had reached the point where the gift by this taxpayer constituted a gift from the proceeds of the sale of his stock. The Commissioner argued further that the gifts were not bona fide and were made with the intent to defraud the Government of the tax upon the sale.

According to the Board, there is no evidence to support this contention of the tax bureau. The gifts in this instance, says the Board, were of the stock and not of the proceeds therefrom and none of the amounts received by the donees constituted income to this taxpayer. The Board further states that the Commissioner's determination was erroneous.

A lesson is obvious in all of these cases which have been cited. It is that any legal methods to

forestall the payment of taxes are not likely to get you into trouble. The only kind of transaction of this sort which might be considered as "colorable" are those where the devices to escape taxation are not genuine. That is, where they are not what they seem to be. In other words, a man who would make a gift of certain property to his wife and then hold some sort of strings on that gift and still pay no tax on any profit from its sale, would be doing something by which he might get himself into serious difficulties.

One authority has stated that the right to change the status of an organization, or to dissolve an organization in any legal manner, is not made ineffectual because the motive impelling the change is to reduce or avoid taxation in the future. The right so to do, according to this authority, is an individual's right, inseparably connected with an individual's right to own and control his property. It is not unnatural that any thoughtful business man takes such steps. It is altogether different from tax dodging, the hiding of taxable property, or the doing of some unlawful or illegal thing in order to avoid taxation.

Factors Determining the Location of Paper and Pulp Mills

Part IV (Conclusion)—Disposal of Waste and Investment

By HARRY E. WESTON

Associated with Thomas H. Savery, Jr., Chicago; Formerly Assistant Professor of Pulp and Paper Manufacture, the New York State College of Forestry, Syracuse, N. Y.

ALTHOUGH numerous losses occur in the preparation of wood for either mechanical or chemical pulp, the real wastes occur in the chemical treatment of the raw material. Bark, wood shavings, and sawdust might be considered wastes, but these materials, although not as valuable as if in condition for easy pulping, have a potential value as fuel. Under such conditions, provision is commonly made in the original design of the plant for their utilization in the generation of steam. Where no provision is made either in the design of the plant or in selling as a by-product, particularly sawdust, it would be necessary to consider the material as waste. If the material is to be considered as waste, provision would have to be made for cheap disposal. In some instances, it is known where such material is stored and then burned without any effort as to utilization of the heat value. In other cases it might be used as a "fill" for either low or swampy ground on the company's premises or removed beyond the company's holdings and employed for the same purpose.

The waste from ground wood or mechanical pulp manufacture consists largely of slivers produced during the grinding operation. The slivers approximate the size of match sticks or may be either smaller or larger. Much material, representing in some instances upward of 5 per cent of the weight of the wood ground, oftentimes finds its way to the sewer and thence to the streams bordering the mills. However, many mills are not treating this material as waste but are refining and using it in the manufacture of cheap papers.

In the manufacture of sulphite pulp, approximately 50 per cent of the total weight of the wood, the non-cellulose portion, goes into solution in the cooking liquor and together they are discharged as waste liquor. The chemical composition of this liquor has been studied but is understood to only a very limited extent. Phelps ([10]) states that the waste material in the liquor resulting from the digestion of sufficient wood to make 1 ton of pulp may be summarized as follows:

	Pounds
Wood Material	2,000
Calcium Sulphate	449
Sulphur Dioxide (omitted from total)	18
Sulphur in sulphuric acid and in organic combination	196
	2,645

The waste liquor containing this quantity of solids is, of course, in very dilute form. In fact, in the production of one ton of pulp, 2,500 to 5,000 gallons of waste liquor will be produced with the solids representing 10 to 12 per cent by weight of the total volume. In terms of weight, therefore, for every ton of pulp produced, approximately 10 to 20 tons of liquor containing about 1 to 2 tons of solid substance have to be handled. At present the greater percentage of the liquor produced in this way is discharged into streams. With a production of over 1¼ millions of tons of sulphite pulp in 1924 in the United States, it is easily seen that the disposal of the waste liquor is a problem of vast importance. Stream pollution

10. The Pollution of Streams by Sulphite Pulp Waste—by Earle Bernard Phelps.

has been sufficiently serious in some localities to not only warrant investigation but also legislation. The situation is such that a number of plants might be forced to shut down should some of the laws be strictly enforced.

Research workers have studied the problem for many years and a number of interesting, although often uneconomical uses for the waste liquor have been discovered. Alcohol, tanning extracts, adhesives, and road binders are only a few of the products that have been produced. The most recent development, perhaps, is to evaporate the liquor and then use the concentrated material as fuel under boilers for the generation of steam. Such a utilization would indicate at least a scheme which might be used to prevent stream pollution by this waste.

TABLE 5

ESTIMATED WASTE IN MILL EFFLUENTS—UNITED STATES—1923

	Production Tons	% Waste	Waste Tons	Value Ton	Waste Dollars
Newsprint, 1924 ..	1,470,581	5%	73,500	$20	$1,470,000
Book and Writing	1,598,431	4%	63,900	30	1,917,000
Wrapping	1,026,979	3%	30,800	20	616,000
Boards	792,832	5%	39,700	15	595,500
Mechanical Pulp .	1,580,553	4%	63,200	10	632,000
Sulphite Pulp ...	1,488,787	2%	29,000	30	870,000
Sulphate Pulp ...	243,681	2%	4,860	20	97,200
Soda Pulp	445,162	2%	8,900	20	178,000
	8,647,006		313,860		$6,375,700

Due to the recovery systems in the soda and sulphate processes, the disposal of the so-called black liquors is made easier. However, the disposal of the lime sludge waste in the recovery of the alkali in both processes, and the carbon from the leaching operation in soda pulp manufacture are problems which should receive careful consideration.

The importance of the lime sludge waste may be emphasized by simply suggesting that in soda pulp manufacture theoretically for every 30 pounds of caustic soda produced, there would be formed 100 pounds of calcium carbonate. In practice, the quantity of sludge would be even greater since it is customary to causticize 100 pounds of soda ash with about 60 pounds of lime, when it is estimated that approximately 50,000 pounds of caustic are required for a mill producing 50 tons of soda pulp daily, it is easy to approximate the enormous quantity of sludge produced. This sludge may be discharged into the streams, used as a fertilizer, or piled on the land. In some cases, it may be burned in rotary kilns and the lime recovered and used in the causticizing of new liquor.

The loss of fiber in the white waters from both pulp and paper mills of the United States has been estimated at over 300,000 tons with a money value of over $6,000,000. Hoyt ([11]) tabulates this data as shown in Table 5.

Such figures, although they are intended in no way as authentic statistics, show an effort at least to approximate the monetary value of fiber that is lost in the white waters. Perhaps the monetary loss would be even higher if the value of such materials as filler, sizing and color were considered along with the fiber loss.

Bearce ([12]) states that the estimated average loss throughout the industry divided as to grades is approximately as follows: wrapping 5 per cent; news 7 per cent; tissue 10 per cent; board 10 per cent; and book 15 per cent. Assuming that it takes 110 tons of furnish to produce 100 tons of finished paper and that 80 per cent of the excess furnish is recoverable, the amount of papermaking material that can be reclaimed is 8 tons per day. If the stock is valued at $40 per ton it represents a loss of $320 per day, or approximately $100,000 per year.

Aside from such a tremendous economic loss to the industry, it is necessary to consider the effect of the deposit of such quantities of material upon the river bottoms as discharged from mill sewers.

Investment

Accurate figures regarding the cost of a pulp and paper mill are not easily obtainable, since an estimate is dependent largely upon local conditions. The construction cost may be influenced considerably by a careful utilization of topographical features of the site chosen for the location of the plant. It is imperative that the designing engineer give due consideration in his estimate to the transportation of materials within the plant since this item plays a very important role in the manufacture of both pulp and paper. The materials of construction of the plant buildings will depend considerably upon the geographic location of the installation and the nature of the process. It is not thought advisable, except under abnormal conditions, to erect a chemical pulp plant of less than 25 tons daily capacity. Such a plant would require approximately 50 cords of wood per day.

Neglecting the investment necessary for timber holdings, the capital required for a pulp and paper installation may be roughly approximated by the use of the following table.

Type of Plant	Investment per Ton Daily Production
Chemical Pulp Mill.....	$15,000—20,000
Mechanical Pulp Mill.....	10,000—15,000
Paper Mill	15,000—20,000

Estimates show that a complete sulphate mill of 100 tons daily capacity would cost approximately $1,300,000 or approximately $13,000 per ton actual in-

11. Elimination of White Water Waste with the American Continuous Filter. John T. Hoyt, Paper Industry, Feb., 1926.

12. Report of the Committee on Waste. G. D. Bearce—Technical Association Papers and Reports, 1926.

PLANT LOCATION (PULP & PAPER MILL)

PROPOSED PLANT SITE

Factors		Prospective Sites			
WATER SUPPLY	Quantity Available				
	Quality (Chemical Analysis)				
	Supply—Lake, River, etc.				
RAW MATERIAL	Species Available				
	Proximity of Supply				
	Abundance of Supply				
	How Transported to Mill				
	Proximity of Other Necessary Materials				
TRANSPORTATION	Rail Lines Available				
	Navigable Water Courses				
	Highways				
	Rates of Common Carriers				
	Service of Common Carriers				
MARKETS	Domestic				
	Foreign				
	Competition				
POWER	Nearness of Supply of Coal, Fuel Oil, etc.				
	Cost of Fuel at Plant				
	Possibilities of Water Power Development				
	Present Supply of Electric Power and Cost				
LABOR	Sources of Supply				
	Character of Supply — Native, Foreign, Skilled, Unskilled				
	Current Wage Scale				
	Unions				

Factors		Prospective Sites			
	Initial Cost of Land				
	Suitability of Topography				
	Nature of Subsoil				
	Proximity to Transportation Facilities				
	Proximity to Supply of Building Materials				
	Waste Disposal				
	Climate				
	Fire Protection				
ENVIRONMENT	Living Accommodations				
	Schools and Churches				
	Recreational Facilities				
	Healthfulness				
	Community Standards				
	Law Enforcement				
LEGAL ASPECTS	Tax Rate				
	Laws and Local Ordinances				
	Character of Local Government				
FINANCIAL AIDS					

vestment. Such a figure includes the cost of buildings of steel and concrete with brick panel walls for a climate similar to northern New York, as well as the cost of equipment delivered and erected.

Most engineers estimate from 20 to 25 per cent above initial investment for working capital. Estimating 25 per cent for working capital would increase the total investment in the 100-ton sulphate mill to $1,625,000. Such an estimate, however, by some manufacturers is not believed to be sufficiently high. Based upon the assumption that a considerable period of time is required to place the mill in operation and in the development of a satisfactory market for the product or products, they claim that a working capital of 50 per cent of the initial investment is none too high.

With such a large initial investment as is required for the erection of a pulp and paper mill, it is necessary for the engineer responsible for the location of the new plant to eliminate in-so-far as possible the personal equation. An impartial study of the entire situation must be made if the plant is to be located most successfully. Early associations, family ties, and personal preferences must be relegated to the background. A fresh viewpoint becomes a primary requisite since a balance of the advantages and disadvantages of any particular site must be struck.

To aid in this impartial study, a master sheet developed to permit the charting of many of the most important advantages and disadvantages of any specific site would at least seem advantageous. Such a sheet when carefully designed would simplify the systematization of the reconnaissance.

The accompanying chart will give an idea as to the kind of information generally sought on such a survey and how readily the information when received may be tabulated.

After the collection of the survey data, its interpretation becomes very important. All of the facts acquired by the survey must be carefully analyzed and decisions made from these analyses. Too much emphasis cannot be placed upon the importance of this phase of the work since the success or failure of an otherwise well-designed and operated plant may be determined by its economic and topographic location.

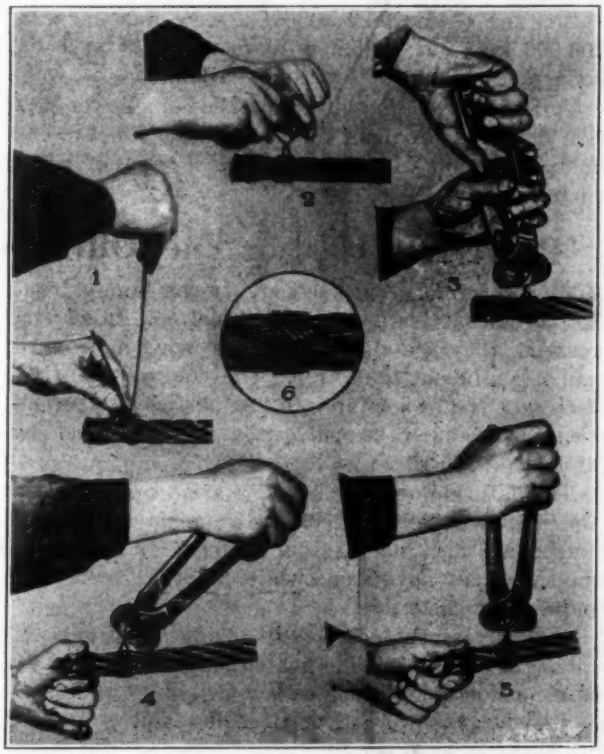
A Few References for Additional Reading

Lansburgh, Industrial Management, Chapter IX.
Diemer, Factory Organization and Administration, Chapter VII.
Day, Industrial Plants, Chapter III.
Dutton, Factory Management, Chapter VI.
Johnsen & Hovey, Utilization of Waste Sulphite Liquor.
Bearce, The Progress of Waste Elimination in the Paper Industry.
Piquet, John A., Industrial Plant Location, Series of Articles beginning in the January, 1925, issue of Industrial Management.
Dockets No. 644, 11950, 13905—Official Classification Rates on Paper, Interstate Commerce Commission.
Sutermeister, Chemistry of Pulp & Paper Making, Chapter 13.

How to Seize Wire Rope

THE end of an ordinary wire rope should have at least three seizings to prevent unlaying, which if it occurs, would render the rope useless. The seizings may be replaced by fittings if they are designed to prevent unlaying of the rope.

1—Wind the seizing wire on the rope by hand, keeping the coil together and considerable tension on



the wire, winding over from left to right as in figure number 1 of the accompanying plate.

2—Twist the ends of the wire together counterclockwise by hand so that the twisted portion of the wires is near the middle of the seizing.

3—Using Carew cutters, tighten the twist just enough to take up the slack. Do not try to tighten the seizing by twisting.

4—Tighten the seizing by prying the twist away from the axis of the rope with the cutters.

5—Tighten the twist again as in 3. Repeat 4 and 5 as often as is necessary to make the seizing tight and rigid. Cut off the ends of the wires, and pound the twist flat against the rope.

6—The appearance of the finished seizing is shown in figure 6.

Any annealed low carbon steel wire may be used for seizings, the size ranging from No. 10 to No. 18, depending upon the diameter of the rope. This method is taken from the United States Government Master Specifications No. 297.

Pointers for the Engineer

By W. F. SCHAPHORST, M. E.

New Record—208,000 KW!

TWENTY-FIVE years ago we thought that a 5,000 kw. turbo-generator unit was BIG and that it was about the limit in size.

But the General Electric Co. now announces a 208,000 kw. unit, which is more than 41 times as large as the old 5,000 kw. combination.

This new large unit will be installed in a power station on Lake Michigan for serving the Chicago industrial section. It will operate at a speed of 1,800 r.p.m.

Pulverized Coal or Fuel Oil?

PULVERIZED coal has some of the same advantages that are possessed by fuel oil. In several respects they are alike. Both are being more used and talked about than ever. They are alike in that each must be broken up into fine particles to be efficient; coal must be pulverized and oil must be atomized.

The natural question therefore arises: which costs the more—pulverizing coal or atomizing oil? The correct answer, thus far, is not known. In some tests oil shows an advantage while in other tests coal pulverizing costs less.

In one test the cost of atomizing 1,000 gals. of oil is given as $0.817 and in another test $1.58, which is a considerable difference.

One large power station handles and pulverizes its coal for $0.36 per ton.

Similarly, authorities differ regarding the relative costs of atomizing oil. Which is the better way—mechanically or with steam? Each method has its adherents. Up to the present time I am a believer in doing it with steam.

Save the Drops

IT HAS often been written that little is known about the amount of lubricating oil that should properly be used in a steam engine. How many drops per minute is the correct number? One or ten?

One drop per minute may not be enough in your engine; 10 may be too many. It is impossible to look inside an engine and actually see what the lubricant is doing, and even then we could not be sure without a test of some kind.

A good test for determination of the correct amount of lubricant is the "flywheel test."

While feeding, say, 10 drops of oil per minute to the cylinders, just after a long run, and while running at normal speed, throw off all load from the engine. Then suddenly close the steam valve. The flywheels will cause the engine to continue to run for some time, and that is an important factor. How long does it take to stop? By use of your watch you can find the time to the second. Make a note of the time required to stop from the instant the steam valve is closed until the engine stops "dead."

Next time try 9 drops of oil per minute, but do not allow any other condition to be changed. If the stopping time is the same, you may as well save 60 drops an hour, 600 drops a day, or 18,000 drops a year.

Then try 8 drops, 7 drops, 6 drops, etc. Finally, use the least number which permits maximum stopping time.

Judgment must be used with this test, of course. Do not choke down the lubricant until the cylinder is liable to be ruined. But as long as the stopping time is at its highest you can feel certain that the cylinder is well lubricated.

Of course, this test is not applicable or practical in every paper mill.

Power of the Sun

WE FREQUENTLY read about the enormous power transmitted to the earth by the sun. There is considerable difference of opinion amongst authorities as to just what that power is. I would like to know the exact quantity myself. For example, the following was written by the late Col. E. D. Meier, founder of the Heine Boiler Company:

> "Remembering, then, that this sun-energy reaches us only one-half of each day, we may, whenever we learn how, pick up on every acre an average of 175 horse-power during each hour of daylight, as a surplus which nature does not require for her work of food production."

In a paper recently read before the American Chemical Society Henry L. Doherty said:

> "The sun delivers as much as 6 B.t.u. per minute per square foot of area. If this could all be recovered as power without loss it would in one minute equal all the power we now use in the United States in one year."

There are 43,560 sq. ft. in an acre and 42.41 B.t.u. per minute is equivalent to one h.p. Therefore, according to Mr. Doherty, the sun delivers about 6,160 h.p. per acre.

Robert T. Aitken of the Lick Observatory says:

> "Every acre of the earth's surface which is exposed to the vertical rays of the sun is constantly receiving energy at the rate of four thousand horsepower."

All of this is interesting, and I am sure other readers of THE PAPER INDUSTRY would like to know more

about the actual energy transmitted to the earth per acre. It is estimated that the sun is continually radiating into space 1,000,000,000,000,000,000,000,000 horsepower.

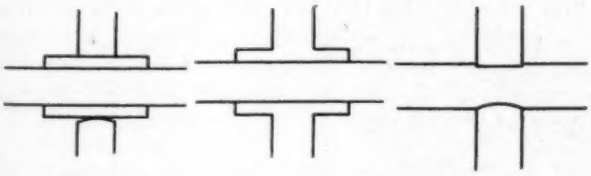
Removing Slag from Tubes

IT HAS been found by careful experimentation that where slag forms and bakes onto the lower row of tubes of water tube boilers, as it often does, cold water is more effective for the removal of the hard baked-on slag than is steam. The reason for the breaking up of the slag with cold water is the same as the reason why hot dishes and glasses break when suddenly cooled. The cold water causes the slag to crack and fall off in large pieces. In these tests it was also found that freeing the tubes of slag increases the chimney draft, helps maintain high efficiency, and saves much money due to the time previously required for laying up and cleaning boilers. Now the cleaning is done while the boilers are in operation. During the cleaning process the temperature of the flue gases was reduced only about 15 degrees. The cold water was introduced into the boiler and onto the hot slag by means of an old-fashioned hand lance.

Measuring Leather, Paper, Felt, Etc.

SOME time ago a sales manager showed me how to measure the thickness of anything that is soft, such as leather, felt, or paper.

He said that in many instances, purchasers find that the thickness is less than specified and refuse to pay the full price. The trouble usually is, however, that these people are not equipped with the



right kind of measuring device and they do not know how to do it with ordinary instruments. They do not do it in the right way. He went on to tell how he takes his micrometer along with him when he visits the complaining buyer, and proceeds to demonstrate that the buyer is wrong.

This is the way he does it:

He produces a piece of sheet metal and measures its thickness with his own micrometer and has the buyer measure it with the buyer's micrometer. The measurements jibe very closely where both instruments are calibrated correctly. He then measures a thicker piece of sheet metal and they jibe again. They also correspond when measuring thinner metal, glass, or other hard substances.

The manager then says: "It is evident that our instruments are both accurate. We will now measure the paper."

Here, however, is where the buyer's micrometer fails to register correctly. It shows a "thinner" reading, and it is all because of the fact that the micrometer is not provided with sufficient bearing surface to measure the soft paper. The pressure produced on the paper is sufficient to compress the fibers slightly, the contact "sinks in" and the reading is therefore thin.

The sales manager's micrometer is provided with a broad bearing surface and therefore does not compress the paper appreciably, hence the difference in the readings.

A good way to measure correctly with a micrometer incorrectly made is to "make" larger bearing surfaces as indicated in my sketch and subtract the combined thickness of the metal pieces from the total.

Lazy Civilization

THE paper mill engineer who is physically lazy and mentally alert should, according to history, do more for his mill than the one who is physically alert and mentally lazy.

Lazy men have done more toward inventing and improving things than have hard-working, physically alert people. It is easy to imagine that the man who put the first sail on a raft and invented the sailboat thought that paddling was too strenuous. The bow and arrow was invented to make living easier. Horseback riding eliminated walking. But horseback riding isn't 100 per cent comfortable, so someone invented the wheel and placed wheels on a chariot behind the horses to make traveling smoother. Defeated and enslaved nations in the old days were compelled to do the work that the victors didn't like to do. The windmill, the water wheel, the treadmill, and then the steam engine were invented by lazy humans.

All of us have heard of the boy who invented the first automatic valve on a steam pump. His name was Humphrey Potter. He preferred play to work and his active mind conceived a string leading to the valve he was operating by hand which would make the pump operate its own valve. It worked. As a laborer Humphrey Potter was lazy.

Of course, there may be exceptions. Nobody has ever accused Thomas Edison of being lazy. Yet, probably as a laborer he was lazy, too. He always did the work he "liked" to do, which, according to the late Dr. Steinmetz, isn't work at all. Steinmetz devoted four hours out of every day to doing things that he didn't like to do. He claimed that a man "works" only when he does that which he doesn't like to do.

The Constitution of the United States guarantees equality of opportunity to every American citizen. Furthermore, under its provisions all men are equal before the law. This nation, nor any other nation, does not and cannot guarantee equality of ability.

Editorial Comment

By WILLIAM SIBLEY

Motion Pictures in the Plant

THE value of industrial motion pictures is evident from the growing use of these educational films in all branches of industry. Pictures convey a message to every kind and type of worker. The interest and attention of the men is held by a motion picture, with its variety of action and interesting details. It is therefore possible to drive home a lesson much more effectively with motion pictures, especially when a well-chosen, impressively-delivered talk on the subject is given in advance of the picture showing.

When industrial pictures were first developed they dealt almost entirely with technical details and processes. The recent trend is toward making them more interesting by injecting "human interest" features, and so demonstrating the association between men and methods more effectively. Safety films are now largely of this type. Correctness of detail in the picture is also essential. Workers are quick to notice irregularities in performance of operations as shown on the screen and as carried out in their own plant.

In the showing of motion pictures on safety, for example, greater success will be obtained if the plant itself is well-guarded and safely operated. Otherwise the workers may accuse the management of failing to provide the safeguards shown and perhaps be inclined to look on the picture with sarcastic resentment.

Some plants hold exhibitions of films during the noon hour. Others find it best to show the pictures at the end of a shift. Weekly evening meetings are commonly held in many organizations. In such cases, the families of the workers are invited and perhaps entertainment of various kinds is provided. Local talent, music, a comedy reel, dancing, or other features may be added to the program. The educational film will thus reach the wives and children as well as the worker. In plants employing large numbers of foreign-born, historical films are frequently used at these evening meetings, the basic idea behind this addition being the selling of America to potential Americans.

Where employees' clubs are in existence the arrangements for holding meetings and entertainments are left in the hands of the club committees. In this way, attractive programs are frequently gotten up, with increased enthusiasm on the part of the worker and his family as the result. A short constructive talk by an administration official (make sure it is short) has been added with success. When local theaters or halls are hired the expenses are paid from the club treasury.

The cost of motion picture equipment is nominal. Several excellent types of projection apparatus are on the market at comparatively low figures. Any suitable location for the exhibition of the picture can be chosen, ranging from the end of a hallway to an auditorium or theater. Portable projectors and screens, and non-inflammable or slow-burning films enable the pictures to be shown in almost any location.

A wide choice of subjects for industrial films is found in the collections of the National Safety Council, the Y. M. C. A.'s, and other sources. The Safety Council films are available to members and for most pictures the cost is merely the transportation each way with a nominal rental charge per day used on such films. The Y. M. C. A. films are available to all clubs and industries, usually the only charges being made is that for transportation. In addition, a number of private exchanges and co-operative associations or other organizations make available a still wider range of suitable films.

It is evident that motion pictures alone will not correct wrong practices or promote any wholesome doctrines. The impression made by the picture must first fall on a mind that has been prepared to receive it. Systematic follow-up is then necessary to keep the impression alive. Used as an auxiliary in a complete industrial relations' program, however, motion pictures can be made to serve a purpose mutually beneficial.

Installment Buying

WHEN no less an economist than Roger Babson publicly declares that "a distinct recession in business, possibly a panic, will occur within two or three years, due to the result of overextension in the installment business, which is today eating into the vitals of business like a cancer," and with the practice becoming so universally adopted as to directly or indirectly affect practically every business or industry, it becomes necessary that we give serious thought to the situation.

It is true that few economic trends have surpassed that of deferred payments in rapidity of growth and number of transactions involved. But it is equally true that the principle of installment buying has been in actual practice for hundreds of years. Those Europeans now rightfully classed as "ancients" knew how to sell a house with a payment of one-third

—— on Timely Subjects

down, the balance to be paid in two equal annual installments. It is from this beginning, installment buying and selling has extended itself into all manner of fields.

With the advent of the motor car and greatly augmented average earnings, deferred payment operations have become tremendously enlarged, and there has been induced research and subsequent criticism of the practice. In spite of this criticism, which can now be heard on every side, let it be said at the outset that without the principle of deferred payments the automotive industry would today be only a fraction of its present size and influence. Deferred payments in the automotive field, whether the dealer carried the installment paper, hypothecated it with his local banker, or cashed it with one of the many finance companies, has permitted and encouraged mass production—without which there could be no market for a possible 4,000,000 cars annually.

According to worthy statistics the amount of merchandise sold on the partial payment plan now totals in excess of $6,000,000,000 a year—or approximately one-sixth of the nation's total retail trade. The amount is of course colossal—as is the 5 per cent thereof ($300,000,000), which might conceivably be saved the buying public through the payment of spot cash. In the light of the fact that life insurance has doubled its total volume in the past five years and that savings bank deposits have increased from $14,875 million in 1920 to $21,134 million in 1925, we may reasonably discount the assertion that installment buying is inimical to thrift or that it is incompatible with intelligent buying habits. But even laying aside the factors of savings deposits and life insurance business, there is yet another encouraging fact found in the American Bankers Association statement that of the $6,000,000,000 deferred payment volume not more than $2,750,000,000 is carried as a total at any one time. In our mind that total, huge as it may seem, is not an alarming mortgage on the total income of the nation, which is more than 60 billions of dollars.

As time goes on and our living standards increase, we meet with increasing difficulty in defining luxuries from necessities. Ascetics could doubtless indicate several things commonly regarded as necessities that might well be done without, but since asceticism is by no means an American trait, such indication would receive very minor attention. A luxury is that which one could dispense with as being something one could not afford. If installment buying really stimulates the purchase of articles of this sort, or needlessly imposes the enslaving burden of debt, then it is open to criticism. Doubtless it does just this with a certain percentage of the people who take unwise advantage of the deferred payment plan. Knowing, however, that the total installment indebtedness has never exceeded, at any one time, ten per cent of our annual income, we find it difficult to view the deferred payment tendency as a "cancer eating at the vitals of American business."

Things Worth Knowing and Doing

PULVERIZED lampblack is very liable to become hot and start a fire if it is wet. It should be kept in a closed metal container.

In determining the size of boiler feed pump for a plant, the capacity should be 100 per cent above the normal rating of the entire boiler equipment. As an illustration: for a 2,000 rated h.p. plant, the pump should have a capacity of 4,000 h.p., or about 250 gallons per minute.

Where a great many steam traps are used, it is a paying investment to have one or more men make periodic and frequent inspections for the purpose of detecting leakage or improper operation.

Where steam mains are laid underground, the location of the flanged joint should be marked in some way on the pavement or roadbed so that they can be easily identified in the event it becomes necessary to uncover the pipe. Such locations may be identified by driving a steel pin into the ground, or if paving is present, by insetting a marking stone.

Use cast steel, rather than cast iron valves, on steam boiler work where there is a pre-heat of 80 degrees or more.

Overhead sprinklers sometimes do quite as much damage as the fire they extinguish. Waterproof covers for process machinery or stocks of material are sometimes employed by mill owners having great dependence upon working supplies or particular machinery. These covers have been known to save a great deal in time, material and investment. Consideration of them, however, must be put up to the fire insurance companies.

Every boiler fireman should consider it his first duty to blow down the water glasses and water columns and to try the gage cocks on each boiler. In this way he immediately makes sure that all his connections are clear and that there is sufficient water in the boiler.

Scuppers for conducting water to the outside of the building or to the sewer should always be provided where concrete or water-tight floors are used.

ABOVE—*Those who accepted loving cup and certificates of award on behalf of winners in the 1926 paper and pulp mill safety contest, at Paper and Pulp Section Luncheon. Top row, left to right: M. G. Hoyman, Kimberly-Clark Co.; L. Larson, Marinette &Menominee Paper Co.; F. H. Rosebush, Nekoosa-Edwards Paper Co.; A. P. Costigane, secretary, Ontario Pulp & Paper Maker's Safety Assoc. Bottom row, left to right; F. A. Robinson, Edw. J. Goodman and A. W. Redlin, Kimberly-Clark Co.*

TO THE RIGHT—*Silver loving cup awarded to the Neenah, Wisconsin, mill of Kimberly-Clark Co., for perfect no-accident record in eight months' contest.*

ACROSS THE TOP—*Photograph of employees of the Neenah, Wisconsin mill of Kimberly-Clark Co., winners of silver loving cup awarded by* THE PAPER INDUSTRY *for a perfect, no-accident record among 72 pulp and paper mills in North America, members of the National Safety Council, for the eight months, January 1, to August 31, 1926. Beginning October 16, 1925, this mill operated more than one entire calendar year without an accident.*

ABOVE—*Photograph taken at luncheon of Paper and Pulp Section of the National Safety Council, held in King Wah Lo Cafe, Detroit, Mich., October 27, 1926.*

Fifteenth Annual Safety Congress

Paper and Pulp Section Establishes Record in Detroit Meeting, October 26 and 27, 1926

THE meeting of the Paper and Pulp Section of the National Safety Council on October 26th and 27th at the fifteenth annual Safety Congress, held at the Book-Cadillac Hotel in Detroit, was undoubtedly the most successful in its history.

Enthused by the inspiring efforts put forth by Chairman W. J. Peacock through the medium of his wonderful monthly news letters to the membership, and participation by so large a number of mills in the recent contest for the silver loving cup awarded by THE PAPER INDUSTRY to the mill which made the best no-accident record for eight months beginning January 1st of this year, seventy pulp and paper mill representatives and others interested in the work of this section traveled to Detroit to attend the meeting.

From the moment the meeting was called to order by Chairman Peacock on Tuesday morning until the last sound of the gavel on Wednesday afternoon, there was hardly an idle moment, for when morning sessions had ended, discussions were continued by groups through intervening hours and the entire afternoon of Wednesday, following the luncheon, at which the cup was awarded, was taken up with a discussion regarding a new scale of time losses for permanent disability to be used in the next contest, which might be the forerunner of bringing about a complete revision of the present so called standard method.

The program was exceptionally good. All the topics were logically arranged and of vital importance to the success of Safety in the paper industry and presented by men whose experience gave authority to their views and opinions, and these were followed by spirited discussions.

Wednesday Luncheon

Great interest and enthusiasm was centered on the Wednesday luncheon when the silver loving cup was presented to the winner of the Contest, the Neenah Mill of Kimberly-Clark Co., Neenah, Wis. The Neenah Mill operated through the entire period of eight months without an accident, and has even accomplished the greater distinction of running since October 16, 1925 to the date of presentation—and as far as we know is still going—without an accident.

The employees of the Neenah mill having been advised of their success immediately upon confirmation of their record, elected one of their fellows, Ed Goodman the millwright, to travel to Detroit to bring back the cup to the city of Neenah, where a big demonstration was staged. Napkins were printed announcing their mill as "Champions of Safety" and a picture of the cup in the center, surrounded by the name of "Kimberly-Clark Co., Winners of Paper Industry Safety Cup," and these were distributed at the great banquet on Wednesday evening.

The luncheon was held in the King Wah Lo restaurant adjoining the Book-Cadillac Hotel. Between fifty and sixty were present. It was a pleasure to all that John M. Sandel, formerly of the National Safety Council and now director in the Department of Labor and Industry, of the State of Pennsylvania, was present. Mr. Sandel was the referee in the thirty-day contest conducted by THE PAPER INDUSTRY in August, 1925.

Following some lively singing led by Al Kroes, of the Employers Mutual Liability Insurance Company of Wisconsin, and a pleasing solo by C. E. Jackson, mill manager of Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis., Chairman Peacock presented the editor of THE PAPER INDUSTRY, A. Scott Dowd, as the one who would satisfy curiosity by announcing the name of the winner and present the Cup.

Presentation of Loving Cup

The speaker conveyed a message from Edward B. Fritz, publisher of THE PAPER INDUSTRY and donor of the awards for the Safety Contest, regretting his inability to be present to make this presentation and congratulating the officers of the Section and the mills which took part in the Contest for the enthusiastic spirit with which they entered into it and their remarkable accomplishment. Mr. Dowd, then spoke in part as follows:

"Six years ago when THE PAPER INDUSTRY magazine entered into an agreement with the National Safety Council to assist them in their work of Safety education in the pulp and paper industry, we considered it one of our greatest opportunities to help in the effort to increase production in our industry through the elimination of waste represented in lost time due to accidents, and to preserve to thousands of individual workers happy and useful lives.

"Our efforts until last year consisted solely of securing and publishing specially prepared articles on Safety education in pulp and paper mills, prepared by men whose experiences had been broad and successful in this work. In 1925, a suggestion came from one of our field men that a contest among members of the Paper and Pulp Section, similar to such contests as were held by many individual companies between their own mills, should create a lot of interest, promote good-fellowship and be a systematic means of enabling the pulp and paper industry to make a name for itself.

"The popularity and beneficial results which attended THE PAPER INDUSTRY's first contest, held in August, 1925, is well known to all of us. It was held for thirty days during which 41 pulp and paper mills participated with amazing results, the success of which inspired the contest of this year for a period of eight months, January 1 to August 31.

Large Number of Entrants

"The success of the recent contest was demonstrated in the increased number of entrants and the decrease in lost time due to accidents." (Mimeograph copies of the list of all the mills which finished in the Contest and their final ranking were distributed. A reproduction of this list is published on another page in this issue.)

The speaker expressed thanks to the chairman and secretary of the Section for the support and help given by them in their monthly news letters, and appreciation to Mr. George Burns, safety engineer of the National Safety Council to whom much credit was due for the success of the Contest owing to his untiring efforts in taking care of the details.

Mr. Dowd continued: "For the purpose of comparison, the unusual thing about the 1925 Contest was that 16 of the 41 mills entered went through the 30-day period without an accident. The 1926 contest being for a longer period of time had many perfect month records, but only one mill was able to go through the entire period of eight months without an accident. The mill which made this remarkable record is the Neenah mill of Kimberly-Clark Co., Neenah, Wis., whose safety is under the supervision of M. G. Hoyman, superintendent of service of all Kimberly-Clark mills in North America and former chairman of the Paper and Pulp Section.

"This particular mill of the Kimberly-Clark group has even accomplished the greater distinction of operating since October 16th, 1925 to date, or more than one entire calendar year without an accident, and is still going.

"The greatest enthusiasm exists among the employees of this winning mill, displayed by their electing one of them to travel to Detroit to bring back the cup to the city of Neenah."

Mr. Ed Goodman, millwright of the Neenah mill was then called to the front and presented with the silver loving cup and the congratulations of THE PAPER INDUSTRY. He responded with words of appreciation on behalf of his fellow workers and expressed on their part the resolution to continue putting forth their best efforts to prevent accidents.

"Another astonishing thing about the 1926 Contest was the low average severity rate," Mr. Dowd continued. "Reference to the final ranking sheets will show the average severity rate

as being 1.746. This is twenty-five per cent lower than the average severity rate for 72 pulp and paper mills reporting for the entire year of 1925, and thirty per cent lower than the Paper and Pulp Section's average severity rate for the past six years. You will also observe that 54 mills in the recent contest finished lower than the severity rate of 2.33, which was the average for the 72 mills in 1925.

Presentation of Certificates

"Realizing the great importance of this achievement, THE PAPER INDUSTRY would like to present certificates of merit to this entire number of 54 mills, but feeling that greater pride would exist in the distinction of being classed among the first ten, we have prepared certificates for this number, on each of which are recorded the number of hours worked, days lost, severity rate and order of rank."

Certificates of Merit were then presented to the following nine mills: Spruce Falls Co., Ltd., of Kimberly-Clark Co., Kapuskasing, Ontario—2nd position; Badger-Globe mill of Kimberly-Clark Co., Neenah, Wis.—3rd position; combination mills of Nekoosa-Edwards Paper Co., Port Edwards, Wis.—4th position; Bird & Son, Inc., Phillipsdale, R. I.—5th position; Niagara Falls mill of Kimberly-Clark Co., Niagara Falls, N. Y.—6th position; Upson Company, Lockport, N. Y.—7th position; Paraffine Companies, Inc., Los Angeles, Calif.—8th position; Marinette & Menominee Paper & Pulp Co., Marinette, Wis.—9th position; Laurentide Co., Ltd., Grand Mere, Quebec—10th position.

Neither of the two Canadian mills having had representatives present to accept the certificates, Mr. A. P. Costigane, secretary and engineer of the Ontario Pulp & Paper Makers' Safety Association kindly consented to bear them to the winners. He spoke promisingly of an effort that the Canadian mills will make in the next contest to take the cup across the border, and F. H. Rosebush, of Nekoosa-Edwards Co., winner of the 1925 Cup and fourth position in the 1926 Contest, responded humorously that while for more than one hundred years, no fortification has existed on the boundary line between the two great friendly countries of North America, a state of war will immediately ensue upon any attempt to make such a capture.

It was observed by Mr. Dowd that among the first ten mills in the lead, four were in the State of Wisconsin, a high testimonial of the excellent work accomplished in that state by means as of their get-together conferences. Two of these mills were of the Kimberly-Clark group and it was observed also that this company's mills won first, second, third and sixth positions. Mr. M. G. Hoyman, who has complete charge of the safety work in all of Kimberly-Clark mills was congratulated highly for this excellent record.

The decision of the officers to accept the offer of THE PAPER INDUSTRY to hold another contest beginning January 1, 1927, was then announced by Mr. Dowd, who then recited the accompanying poem by Douglas Malloch, entitled "Lift Your Aim," considered by the speaker as very fitting and indicative of the spirit which should animate all future competition.

Lift Your Aim

We shot our arrows toward the sun
  Beside the castle wall.
His arrow was the highest one,
  The highest one of all.
Another archer said, "You win."
He answered, "No, I but begin.
  No archer wins, or ever will;
  He goes on aiming higher still."

We never win, we only make
  A mark more near the skies,
Keep shooting for the shooting's sake,
  Not just to win the prize.
The thing today we call the best
Tomorrow is tomorrow's test:
  We never win, we merely find
  Another mark to leave behind.

This makes us archers, makes us men,
  And that is all that will:
To shoot, and then to aim again
  A little higher still.
However high your arrow went,
Be not with one success content:
  Still higher look! Look not below,
  But lift your aim, and bend the bow.

—Douglas Malloch

FIRST SESSION

The first session of the Paper and Pulp Section began at 9:30 o'clock on Tuesday morning, October 26th, in the Book Cadillac Hotel, Chairman W. J. Peacock presiding.

Mr. Peacock gave a brief summary of the events of the past year, stating that there had been eight executive sessions and three regional conferences. Two of the latter were held in Wisconsin and one in Erie, Pennsylvania. The important activity of the year had been the monthly news letters issued with the help of Secretary Umberham and the National Safety Council; many personal letters had been writtten by the chairman, all of which were issued for the purpose of creating group spirit in the section and majoring on the play feature of the contest. There had been difficulty in being able to get mill representatives to attend the conferences or the annual meeting, and the chairman spoke of the wonderful benefits derived from attendance at these regional conferences.

In keeping with his appeal for the friendly group within the section, all of the sixty people who were in attendance were asked to rise and announce their names with the result that everyone then knew each other and felt at home.

Reports of Committees

The Bulletin Committee report was submitted by Chairman W. A. Gleason, Hammermill Paper Co. There had been eighteen section bulletins furnished the council during the year, which the chairman said was entirely too small a number. At least three a month were needed. An appeal was made for new ideas, such, for example, as a case cited of a man—a boss machine tender, who had worked in a mill for thirty-seven years without an accident. This should make a background for a wonderfully fine bulletin.

Chairman Peacock lauded the Code Committee for their work during the year to put the section on the map. A. P. Costigane, a member of this committee, was introduced and thanked, and credit was granted to R. M. Altman, safety director of the Marathon Paper Mills Co., for his part in the formation of the Safety Code. Mr. Altman was not present at the meeting.

The meeting was turned over to the vice-president, F. H. Rosebush, who introduced the program with an appeal for interest and co-operation on the part of the members in helping to put on a campaign of getting members into the section.

The A, B, C of Paper Mill Safety Organization

The first subject on the program for discussion was "The A B C of Paper Mill Safety Organization" which was presented in a very fine paper by G. W. Phillips, of the Champion Fibre Co., Canton, N. C., former chairman of the Paper and Pulp Section.

In giving his ideas and suggestions which he considers very important in organizing for accident prevention, Mr. Phillips reminded that conditions vary somewhat in different plants, therefore no set rule can be laid down or followed. However, he said, it is generally conceded that the accident problem involves three essential activities: safeguarding, education and engineering adjustments.

To secure the best results, it is necessary, of course, that the highest measure of co-operation exist between the management and the worker. The management must be thoroughly sold on the value of safety work in the plant. In other words, Safety must have an equal place along with production, financing, etc.

In organizing for Safety, he said it is absolutely necessary that one man should direct all of the safety activities. The departmental superintendent and foreman are interested pri-

marily in production. Therefore, if the safety of the plant is left entirely to them, it is apt to be neglected in the interest of production. We have long since learned that to accomplish the best results in any enterprise, especially in accident prevention, a certain amount of organization is necessary, he said.

The Executive Committee. There should be at least two committees, an executive and a shop committee. The executive committee should be composed of the manager and superintendents from each department of the plant together with the safety director. This committee should meet once a week to discuss and act upon all Safety problems over which the shop safety committee does not have jurisdiction, and consider Safety suggestions and recommendations for the prevention of injuries. In other words, this committee should act as a clearing house for all Safety ideas and activities and follow them until disposed of.

This committee should also decide all questions of operating methods which affect the safety of the workers; decide on standards for guarding machinery and equipment, standard operating policies, Safety rules and so on.

The safety engineer should submit to this committee a report of each injury causing lost time, together with a suggestion for the prevention of a recurrence of a similar accident.

The Shop Committee. A shop safety committee should be composed of either foremen or workmen from the various departments of the plant. This committee should consist of at least five members and should meet each week. The duties of the shop committee should be:

1—To make inspections of the plant for unsafe conditions and practices, and submit a report to the safety engineer.

2—Help create a safety atmosphere in the plant.

3—Instruct the workmen in safe methods of doing their work and discourage unsafe practices.

4—To investigate all serious accidents and near accidents and make a report with recommendations.

5—Help to encourage the co-operative spirit between the management and the workers.

The size of this committee will depend upon the size of the plant, Mr. Phillips said, but should of course consist of enough members to insure a variety of ideas and opinions, and not so many as to prevent expressions from each member in the short time of one hour which should be allotted to the meeting each week.

While there are differences of opinion regarding the election or selection of the members of a shop committee, Mr. Phillips favors appointment by the superintendents of the various departments, and the members of the committee changed at regular intervals.

Safety Education. Mr. Phillips stated that experience has shown that the most productive field now open to development is that of education—creating and maintaining interest in Safety. A concrete program of safety education is essential to accomplish worthwhile results; not merely posting bulletins, placing danger signs or formulating safety rules—all of which of course are necessary, but there should be a program of instruction covering the hazards of each particular job, followed by a convincing argument why employees should make Safety their first consideration. Mr. Phillips stated that he is convinced that in the plant where men are taught to play safe, there will be less accidents without mechanical safeguards, than there will be in the plant where all machines and danger-

FINAL RANKING OF PAPER AND PULP MILLS, MEMBERS NATIONAL SAFETY COUNCIL—ENTERED IN "THE PAPER INDUSTRY" SAFETY CONTEST—JAN. 1 to AUG. 31, 1926.

Rank.	Member.	Mill.	Aver. No. Employees.	Total Hours Worked.	Total Days Lost.	Severity Rate.
1.	Kimberly-Clark Co.	Neenah	81	141,927	0	.0
2.	Kimberly-Clark Co.	Spruce Falls	270	535,369	10	.018
3.	Kimberly-Clark Co.	Badger-Globe	105	178,210	12	.067
4.	Nekoosa-Edwards Paper Co.	Port Edwards	834	1,684,484	170	.100
5.	Bird & Son, Inc.	Phillipsdale	180	299,070	32	.107
6.	Kimberly-Clark Co.	Falls	567	997,473	134	.134
7.	Upson Company	Lockport	91	156,649	24	.153
8.	Paraffine Companies	Los Angeles	162	260,552	41	.156
9.	Marinette & Menominee P. & P. Co.	Marinette	324	526,728	86	.163
10.	Laurentide Co., Ltd.	Grand Mere	1,093	1,864,815	323	.173
11.	West Virginia Paper & Pulp Co.	Tyrone	570	1,015,847	177	.174
12.	Falls Mfg. Company	Oconto Falls	305	584,983	109	.188
13.	Dill & Collins	Philadelphia	650	1,370,730	265	.193
14.	Itasca Paper Company	Grand Rapids	141	310,650	60	.193
15.	Mead Paper & Pulp Co.	Peerless	96	170,836	33	.193
16.	Mead Paper & Pulp Co.	Chillicothe	599	1,059,481	205	.194
17.	Chillicothe Paper Co.	Chillicothe	105	188,738	37	.196
18.	Robertson Paper Co.	Montville	33	48,814	10	.205
19.	Paraffine Companies	Antioch	284	480,954	106	.220
20.	Strathmore Paper Co.	Woronoco, No. 2	107	277,804	62	.223
21.	Bird & Son, Inc.	E. Walpole	369	715,614	163	.228
22.	Strathmore Paper Co.	Woronoco, No. 1	194	503,875	122	.242
23.	Kimberly-Clark Co.	Niagara	642	1,179,808	309	.261
24.	Paraffine Companies	Sumner	76	123,520	33	.267
25.	Paraffine Companies	Emeryville	84	146,132	42	.287
26.	Albemarle Paper Mfg. Co.	Hollywood	109	209,145	61	.291
27.	Strathmore Paper Co.	Mittineague, No. 1	276	358,478	118	.329
28.	Hollingsworth & Vose Co.	E. Walpole	278	429,768	146	.340
29.	Port Huron Sulphite & Paper Co.	Port Huron	240	458,328	160	.349
30.	York Haven Paper Co.	York Haven	285	560,233	208	.371
31.	Canada Paper Co.	St. Francis	203	356,524	137	.384
32.	Marinette & Menominee P. & P. Co.	Menominee	145	258,746	108	.417
33.	Adams Bag Co.	Chagrin Falls	120	210,905	102	.483
34.	Lakeview Paper Co.	Neenah	108	179,810	89	.495
35.	Northern Paper Mills	Green Bay	570	1,039,528	522	.502
36.	Belgo Canadian Paper Co.	Shawanigan Falls	933	1,848,203	937	.507
37.	Spanish River P. & P. Mills	Soo Mill	658	1,319,267	669	.507
38.	Continental Paper & Bag Mills	Rumford	656	1,099,446	569	.518
39.	Ft. Howard Paper Co.	Green Bay	267	445,721	241	.540
40.	Paraffine Co.'s, Inc.	Port Angeles	264	435,672	242	.556
41.	Finch, Pruyn & Co.	Glen Falls	296	484,864	271	.559
42.	Rhinelander Paper Co.	Rhinelander	343	677,517	428	.632
43.	Wausau Sulphate Fibre Co.	Mosinee	424	782,754	503	.643
44.	Marathon Paper Mills	Rothschild	566	1,068,049	754	.706
45.	Lincoln P. & P. Co.	Lybster	89	152,231	109	.716
46.	Lincoln P. & P. Co.	Sulphite	97	167,967	130	.773
47.	Kimberly-Clark Co.	Kimberly	888	1,646,460	1,309	.789
48.	Lincoln P. & P. Co.	Lincoln	57	101,403	86	.848
49.	Hollingsworth & Vose Co.	W. Groton	252	288,065	324	1.125
50.	Thilmany P. & P. Co.	Kaukanna P.	393	652,816	855	1.310
51.	DeGrasse Paper Co.	Pyrites	391	693,924	981	1.414
52.	Thilmany P. & P. Co.	Appleton	90	331,376	515	1.554
53.	Kimberly-Clark Co.	Atlas	120	203,171	318	1.566
54.	Michigan Paper Co.	Plainwell	284	476,026	933	1.960
55.	Thilmany P. & P. Co.	Kaukanna S.	252	424,884	1,030	2.424
56.	Eastern Mfg. Co.	S. Brewer	781	1,251,481	3,069	2.444
57.	Hammermill Paper Co.	Erie	1,282	2,438,119	6,475	2.655
58.	West Virginia P. & P. Co.	Mechanicsville	1,000	1,685,850	6,395	3.795
59.	Spanish River P. & P. Mills	Sturgeon Falls	472	855,149	10,013	11.708
60.	Eastern Mfg. Co.	Lincoln	250	424,500	6,412	15.104
61.	Albemarle Paper Mfg. Co.	Brown's Island	140	303,564	4,774	15.724
62.	Strathmore Paper Co.	Mittineague, No. 2	95	184,149	6,012	32,638
63.	Canada Paper Co.	Windsor	158	285,978	10,608	37.091
	72 Mills originally entered, but 9 failed to report for entire period.					
		TOTALS	21,894	39,613,134	69,178	1.746

ous places are well guarded and the employees disregard safe practices.

In closing, Mr. Phillips emphasized the fact that results will be disappointing if the safety program is not wholeheartedly and enthusiastically supported by the general manager and superintendents. Half-hearted interest will mean failure, and you can not fool the workers. If the management and members of the safety committees are not in earnest and enthusiastic, you can not expect the workmen to be.

Connection Between Safety and Production

The chairman asked for discussion on Mr. Phillips' paper by requesting opinion on the connection between safety and production, and what the connection is. H. C. Sackett, of Alton Box Board Co., said the part that safety plays in production is keeping an organized force on the job all the time that can go along with the minimum number of accidents.

M. G. Hoyman, Kimberly-Clark Co., remarked that the question arose one time in his company when during a contest, men were being taken out to put on stunts, as to what effect putting so much time on campaigns had on production. It was found on investigation that in two different plants when putting the most intense effort on safety, taking a great many men off the job to help on Safety Committees, the greatest production record was made.

H. T. Bond, Celotex Co., New Orleans, stated it was easier to enforce discipline among men after a safety campaign had started, and production increased which was credited to safety organization.

Mr. Rosebush, Nekoosa-Edwards Paper Co., remarked that his company believes that teaching men safety teaches them the characteristics of carefulness, precision and attention to business that not only make a good safety man, but have a direct result in getting out more tons of paper.

Applying Safety Organization to the Small Plant

Mr. E. A. Kennedy, of the Great Western Paper Co., Ladysmith, Wis., was introduced as the next speaker on the program, whose subject was "Applying Safety Organization to the Small Plant."

Mr. Kennedy used as a basis for discussion the points contained in a pamphlet, "Indulging True Safety Program to Fit Your Needs," put out by the National Safety Council. "Can they be applied to a small plant?" he asked. "Why not?" He could pick eleven men from the audience and call them a football team, but that would be flattering. They would not be a football team until they had some sort of organization. The same thing applies to a small plant as to a large plant.

"The dictionary defines 'organization' as 'a number of individuals systematically united.' Organization deals with men rather than with things," he said. "In its relation to accident prevention, organization has been symbolized as a three-legged stool in which the management, operating executives and workers represent the three legs, each being dependent on the other two to perform their functions. Any two legs are useless without the co-operation of the third. The safety director is the block that retains the legs in a normal co-operative and working position and gives the whole stability. Incidentally, I might add, the safety director is the block on which everybody sits."

Mr. Kennedy stated that as the mill which has large shrinkage is a back number, so it is in safety work. Safety organization is not guess work; it has been proven and it is just as necessary in a small plant as a large one.

A Safety Organization.—One man should direct the safety work in every plant, he said, regardless of its size. In his mill about 250 men are employed and a short outline of what their organization consists of was explained by Mr. Kennedy as follows: "We have the safety director and what we call our foremen's club. It is practically the same as what you call a general committee. It includes all the foremen throughout the plant, a total of nineteen. Every man in that foremen's club considers himself a safety director of his own department. Within this foremen's club, we have an executive committee made up of the officers; that is, president, vice-president, secretary and three members of the inspection committee, which makes an executive committee of six. The president of the club appoints this inspection committee from members of the foremen's club.

"Within each department, a foreman appoints an inspection committee for his department. This inspection committee, the department inspection committee, makes an inspection once a week. They post their report in their department. The inspection is gone over by the foreman, who endeavors to remedy all suggestions made by the inspection committee and crosses them out as they are made. The safety director, when he goes through these departments, looks at these slips and in that way when he finds something has been taken care of, he takes it up with the foreman. The inspection committee makes an inspection once a month, and the safety director makes an inspection once a month. We have monthly meetings of the foremen's club, but at their last meeting, they decided that once a month was not enough. They are going to have a meeting every two weeks.

"A year ago, we organized for safety work. Prior to that time, we did not know what it was to have a month without a lost time accident, but since organizing we have had four months this year without a lost time accident, and in other months we have cut it down to where we have had one minor accident. We have had one fatality this year that knocked us as high as the National Safety contest sponsored by Ford."

Discussion.—Mr. Bartlett asked if the inspection committees confine the work to their own departments, and Mr. Kennedy replied that he has sent men from one department to another to make inspections. He cited an instance on a paper machine on which a step was missing. The crew had always stepped over to miss it but when the man from the next machine noticed its absence, he reported it with the result that it was soon mended.

E. J. Gayner, of Scott Paper Co., asked if the tendency on the part of the committee was to recommend the guarding of machines rather than to push the education idea. Mr. Kennedy replied that it was an educational proposition in the first place, but they make suggestions for guarding and the company takes the matter up. There is no suggestion passed up; if they are not feasible, the matter is explained.

A. W. Hoffman wanted to know who constitutes a foreman, to which Mr. Kennedy replied that his company has three pulp mills, considerable distance from each other. There is a man in charge of each mill who is a member of the foremen's club. When there is a meeting, the foremen of two mills bring two machine tenders that are not on tour with them. These wet machine tenders are not members of the club, but they are brought up to the meeting to instill in them safety organization because they really are foremen in absence of the first foremen. They have no voting power, however.

In reply to a question as to whether any members of the management attend the foremen's meetings, Mr. Kennedy replied that the safety director represents the management at all meetings. If there is anything coming up that the management should be there to decide, they are invited. It has been found that in the presence of managers, the foremen would hold back and fail to express themselves. In reply to Mr. Costigane's query as to whether the discussions became public, Mr. Kennedy replied that the manager and superintendent get copies of the proceedings.

In reply to Mr. Stoble's question regarding rotating the safety inspector every three months, Mr. Kennedy said he is kept for a year and then rotated; the department committees change every three months.

Mr. Kennedy explained a method in his plant of making an inspection trip. In one department there is a superintendent who lost a leg in the mill. He is a fine support for Safety First. When he (Kennedy) starts out to make an inspection, this superintendent has three of his repair crew to follow him around. When a recommendation is made, one man drops off and that is fixed. By the time he has dropped the third man, the first man is back on the trail again.

Mr. Kennedy remarked that the safety director is responsible to see that work is done after it has been recommended; the actual work being done by the millwright.

Mr. Stuart H. Brown asked if the matter of safe practices

takes any part in committee discussions, to which the reply was made that it does. Safety practice education is something that must be stressed; if the foreman is impressed, it gets down to the rank and file in the mill.

Mr. Hoyman was asked to explain whether the foreman's club in the Kimberly mill discussed matters other than safety, such as waste, economy, etc. He replied that twenty or thirty minutes is first allotted to safety and then they discuss production or any other pertinent matter.

The chairman expressed thanks for the splendid discussion and proceeded with the introduction of the next speaker.

The Value of Physical Examinations in Industry

Mr. F. A. Robinson, safety director of the Kimberly-Clark Co. mill in Niagara Falls, N. Y., presented an excellent paper, full of important information concerning his subject, "The Value of Physical Examinations in Industry."

"The human machine costs us more than any mechanical mechanism we have," said Mr. Robinson, who also said that he had been informed that wages paid to industrial workers in the average plant over a period of four years, equals the cost of the plant.

The general tendency of industry today is to develop men for tomorrow; the progressive, alert, keen, ambitious worker of today is the foreman of tomorrow and the executive of the future. But, Mr. Robinson asked, can we develop men to such a degree if they are not in the best of health? The only way to know whether the body is in good physical condition is to have a thorough check-up made by a competent physician.

The best promotion policy is to fill all vacancies from within the organization whenever possible, but if a man is ailing, or slow, or not steady, due to physical trouble, he will not qualify; and here again, medical service would have eliminated him in the first from employment, or helped him to correct his trouble and thus made him a desirable candidate for promotion.

In remarking about the emphasis placed upon safeguarding all hazardous machinery, equipment and conditions, and bearing testimony of the importance of this factor in accident prevention, Mr. Robinson cited that when a plant has been 100 per cent guarded, there is only an insurance against the occurrence of 10 per cent of the preventable accidents, and said "We are not safety boosters when we put men to work with any ailment that might be the means of causing an accident."

Objectives of Physical Examinations. Some of the objectives of physical examinations were given as follows:

1—To ascertain the exact physical condition of employees at time of hiring.

2—To prevent contagious diseases from getting into the factory and being spread among the present force.

3—To place workers in jobs for which they are physically fitted.

4—To prevent workers in poor physical condition from entering the factory, where they would be a danger to themselves, others, and property.

5—To use the information learned through the examination for future follow-up to better his physical condition and make better material for promotion.

6—To prevent workers being transferred to jobs for which they are not physically fitted.

Classification Following Examination. At the Niagara Falls mill of the Kimberly-Clark Co., Mr. Robinson said they have such examinations and do not reject every prospective employee because of some minor ailment. The medical examiner classes them as follows:

A—Those physically fitted for any employment.

B—Those fitted for any employment, but who have minor defects.

C—Those having more important physical defects which would permit them to work in only certain occupations.

D—Those physically unfit for any employment.

The Cost and Results from Examinations. In 1925, this company examined only female help, and out of a total of 288 examinations, 16 were rejected, or a total of 5.6 per cent. In 1926, both male and female applicants were examined, and of the total, there were only 6.3 per cent rejections. Out of the female applicants, there were 4.2 per cent rejections and 7 per cent rejections out of the male applicants. One per cent of the total are temporary, leaving a total of 5.3 per cent permanent rejections. The small number of rejections were among female applicants; further, the average number of defects per man was 2.4 per cent while for the girls, it was 2 per cent, which indicates that the female help is in better physical condition than the male.

The outstanding defects as shown by the examinations were as follows: nose trouble, 35.7 per cent; teeth trouble, 93 per cent; throat trouble, 16 per cent; skin trouble, 12 per cent; right eye trouble, 18 per cent; left eye trouble, 16 per cent; trouble with arches, 14 per cent.

Health service, generally called medical service in industrial plants, costs employers $5.14 per employee a year, according to a National Industrial Conference Board survey of 501 plants employing more than a million workers. Large as this sum per individual worker may appear, it is quite apparent that an extremely small increase in average worker efficiency would balance the account.

The average book on employment gives the cost of turnover as from $50 per person up, Mr. Robinson said, and the cost of examinations generally run from $1 to $2, depending upon the completeness of the examination and the time consumed in making it.

Mr. Robinson pointed out in conclusion that in selling medical service to the management, one big point to consider is that the plant without such service is getting the physically unfit and suffering from it, either consciously or unconsciously, while the plant with the service takes the cream and builds up its force to the point where production costs them less.

Attitude of Employees Toward Medical Examinations

The question was asked about the general attitude of employees toward medical examinations, to which Mr. Robinson replied that it was like anything else that is started in the plant, it is about fifty-fifty; fifty for and fifty against. But it is necessary to sell it and after that it becomes easier to get the older employees into it. The men who come back from the hospital are so pleased they become selling agents.

Mr. Costigane inquired if a man died under an anaesthetic that was practically encouraged by his employer, would the employer be responsible for that death, and what would he compensate the wife and family. Mr. Hoyman replied that one thing which the Kimberly-Clark Co. did before starting a physical examination was to guarantee that it would not interfere with their jobs or their chances with the company. He did not see why the employer should be held responsible.

Mr. Faist, Champion Coated Paper Co., said that his company recommends that a man having to have an operation performed, take it up with his own family physician. In that way, two physicians make the recommendation and one of them is his own physician.

W. A. Gleason, of Hammermill, stated that their plan is not to suggest any doctor to do the work; they can have any doctor they wish. Care must be exercised to not commit themselves or the doctor who is handling the case. In reply as to whether a plant employing 375 employees would justify the employment of a full-time doctor, Mr. Gleason remarked that for the 1,250 employees in their mill, a young doctor is engaged for a period of four hours a day, two in the morning and two in the afternoon, and it works out very well.

Experience in Hernia Cases

The question as to what success was had with physical examinations so far as hernia was concerned drew out a long discussion. Mr. Robinson replied to the effect that about three and one-half per cent of rejections are on account of hernia.

H. C. Sackett stated that the Illinois Compensation Law provides that if hernia comes on a man while he is in the employ of a company, the company must stand behind and pay the medical bill and put the man on his feet, because they claim it is an aggravated condition due to the hazard of his employment.

W. J. Peacock said that in New York, they are responsible to see a man through in such a case and you have very little

leeway, but in Wisconsin it is up to the man to prove the company is responsible and he has quite a hard time proving it.

Mr. Gleason said that in Pennsylvania, the burden of proof is on the employer; that is the compensation law there. There is nothing that can be done. If the employee develops hernia, the company has him taken care of. If he doesn't want it, the company corrects the conditions in another manner.

R. S. Turner, West Virginia Pulp and Paper Co., Mechanicsville, N. J., said that in New York, a man can have hernia and if, during the course of his employment, he aggravates the hernia, the employer or the insurance carrier is responsible.

Chairman Rosebush in closing emphasized one point brought out in Mr. Robinson's paper. That is the Mutual Benefit Association, which is intended to cover a man's accident or sickness while off duty. "That is a fine thing," he said, "and I think that it is a coming thing, and I can't see much excuse on the part of an employee to whom that is offered, for a come-back on the company if he has the opportunity. In addition to receiving the State compensation which protects him, to take employment by the Mutual Benefit Association. I really think he is responsible for all the chances there are for self-protection if he fails to take that protection."

The meeting was then adjourned until 9:30 o'clock next morning.

SECOND SESSION

The second session of the Paper and Pulp Section convened at 9:30 o'clock on Wednesday morning, October 27th, in the Book-Cadillac Hotel, Chairman W. J. Peacock presiding.

Practice vs. Theory in Safety Work

Two topics were assigned for round table discussion, the first being "Practice vs. Theory in Safety Work" and the second, "Frequency or Severity—Which?" In introducing the first subject, the Chairman asked the question, "What is the goal of our safety work?" "Is it a practical help, a possible hope to achieve a condition of no accidents?"

Edward J. Gayner, Scott Paper Company, said that he felt the hope for no accidents would be nearly impossible. Some accidents are absolutely unavoidable and it will be years before the acme of perfection is reached. He went on record with the statement that it is good to hitch your wagon to a star but the nearest we can come to it is some percentage of perfection.

Mr. L. Larson, of Marinette and Menominee, said that as long as we have human nature to deal with, we can expect accidents, although that may not be exactly the right attitude to take. "We seem to be getting somewhere," he said. "While we are not aiming for an absolutely 'no-accident' experience, we are aiming to reduce and we know we shouldn't have as many accidents as we are now having."

I. G. Wood, Indemnity Insurance Co. of North America, said something about the goal of the American Railway Association. They have established a goal of thirty per cent reduction in accidents by 1930. They haven't established a goal of "no-accidents" because they want to establish a practical and workable goal. They say, "We will get five per cent each year, but to believe they can get no accidents is to establish no goal at all."

H. T. Bond, of Celotex Company, remarked that to have no accidents at all in view is almost as bad as having accidents at intervals. His company is trying at longer and longer periods between accidents. Their latest accomplisment is four and one-half months without an accident. Mr. Bond believes that while perfection is impossible, the periods should become so long between accidents, that they will finally be so rare as to be highly exceptional.

Daniel T. Meany, International Paper Co., New York City, thought it much better to develop a careful workman than to win the goal of "no accidents." In one of their oldest mills, they employ about 800 or 900 men, and during the past year have had but two or three lost time accidents there. Credit for this is given to the manager's interest in safety, and second, the foreman and low labor turnover. Getting a man interested in his work with the object in view of making him careful, is in Mr. Meany's judgment, the better goal to look for.

Mat. T. Bartlett, of Hollingsworth & Vose Co., said it is discouraging to attempt to go through any period without accidents. An attempt should be made to lower the number, but make no attempt for the "no-accident" goal.

M. G. Hoyman, of Kimberly-Clark Co., observed that, while perfection means no accidents, and it is doubtful if such a goal could be reached, we should come pretty close to it. Mr. Hoyman's goal is perfection in all endeavors, and he said, "Why shouldn't it be in safety?" There are many ways to work toward that end and, among which is through a contest, which he favors.

In answer to a question put by Chairman Peacock on "What will be the slogan if the 'no-accident' goal will be abandoned?" L. O. Bonner of the Mead Pulp and Paper Co. suggested to give each department head his record for the last year in the form of a chart showing total accidents during the year, and then get him to keep under that line for the current year.

F. H. Rosebush, of Nekoosa-Edwards, winner of the 1925 contest, said, "I am frank to say that I have a dream of no accidents. In 1925 we had 39 accidents. This year we have had 19. I am going to be disappointed if next year we don't cut 50 per cent of those accidents. In December, 1921, we tried to go a week without an accident and felt pretty proud because we did. Later we tried to go a month without an accident and then tried to go two months. At the Port Edwards mill last year, we went five months without any lost time accidents, and I hope the time is coming when an accident in our mills will be something like a catastrophe—so unusual that it will be talked about by all the men. We are trying to get to the point where we will have no accidents and can see no objection to making the goal zero."

Ernest Augustus, of the Mead Pulp and Paper Co., was of the same opinion as Mr. Rosebush. When a month has gone by without an accident, a resolution is made to try to go through the year without an accident. The latest record of this mill is twenty accidents in 730 days; their goal is perfection.

T. Linsey Crossley, Industrial Laboratories, Ltd., Toronto, quoted a Chinese proverb: "If you aim at the moon you will hit higher than if you aim at a tree." He said he was in a mill recently that had a large number of safety slogans and he stumbled over a rod that had been left in the doorway. The aim being no accidents, they should have seen that the rod had been moved. While he doubts if any child would go through school with high honors if it said, "My aim is just to get a passing mark" he believed that all should aim for 100 per cent.

Frequency or Severity

The Chairman called on Mr. A. P. Costigane, safety engineer, Ontario Pulp and Paper Maker's Safety Association, whose remarks were applicable to the conditions as they exist in Ontario. Mr. Costigane spoke in part as follows: "The conditions for various reasons are somewhat different from what you have in the states of the Union. My conviction is, that as far as my experience goes, the computation of accidents should be considered on a severity basis, but frequency should not be ignored.

"The cost of accidents from our point of view is a very vital one, because in our province insurance companies have no standing of any kind. The whole accident prevention movement in Ontario is scattered and under a government commission. The government commission at the beginning of the year levied what is called a provisional assessment on all industries in Ontario divided up into different groups; some groups embracing quite a number of smaller industries, other groups being devoted wholly to one industry. The pulp and paper industry in Canada is large enough to take up a group by itself.

"All accident expenses, all accident costs, both for hospital and disability, for nursing expenses, or anything like that are paid direct by the board in the first place, to the doctors in the second case, and to the hospitals in the third case so that you can easily see there is a direct and close connection between a government department or a government commission and the industry itself.

"When the government is assessing direct, one of the chief aims of industry is not only to view accident prevention from the humanitarian side, but what interests them largely is the

fact that compensation loss must be brought down, or in other words, must be controlled.

"In order to do that and emphasize the necessity for accident prevention, one must of necessity show the cost, and in showing the cost, to give reasons and methods whereby that cost can be brought down and controlled.

"From that point of view, I am convinced that as far as our work is concerned, we should concentrate on severity and study frequency."

George Burns, safety engineer of the National Safety Council and referee of the 1926 contest, was then called upon. He stated that a good many of the sections thought it better to arrange mills on frequency rather than severity, not losing sight of the latter, but taking severity into consideration, and they thought inasmuch as accident prevention was the primary object, they should arrange the mills that way.

There is an element of so-called luck in severity. The breadth of a hand or most anything else is the difference between a fatal accident and a minor accident.

If it is frequency, it is within control. If it is severity, it is not controllable.

In closing the discussion on this topic, Mr. Alexander R. White, Chief Sanitary Inspector, Province of Ontario, spoke at length and concluded with the statement that it is not frequency we are suffering from; it is costs, because we have no control over the frequency but we have every control over costs.

Election of Officers

The report of the Nominating Committee presented the names of the following officers for the ensuing year: Chairman, W. J. Peacock, Northern Paper Mills, Green Bay, Wis., present chairman; Secretary, Mr. Ameil Umberham, Fort Howard Paper Co., Green Bay, Wis., present secretary.

A suggestion was made by the officers of the National Safety Council and the present chairman, that vice-presidents of the Section be nominated, men geographically located who would act as chairmen in their section of the country and handle the affairs of the Paper and Pulp Section in general.

The Committee took the matter under consideration and submitted the following names: M. G. Hoyman, Kimberly-Clark Co., Neenah, Wis.; R. S. Turner, West Virginia Pulp and Paper Co., Mechanicville, N. Y.; James M. Murphy, International Paper Co., Three Rivers, Quebec; G. W. Phillips, The Champion Fiber Co., Canton, N. C.; Mat. Bartlett, Hollingsworth and Vose Co., Boston, Mass.; Ernest Augustus, Mead Paper and Pulp Co., Chillicothe, O.; Alvin Record, International Paper Co., Livermore Falls, Maine, and W. A. Gleason, Hammermill Paper Co., Erie, Pa. A motion to accept the recommendation with the power of election was unanimously adopted.

Safety and Plant Mind

"That the minds of some plant managers and chief executives must be so burdened with other business matters that no time is given to the consideration of the safety and general well-being of the personnel of the organization must be true, for a common subject at Safety Conventions is 'Selling Safety to the Executives,'" said W. A. Gleason, safety director of Hammermill Paper Co., Erie, Pa., when introducing his discussion of the subject, "Safety and Plant Mind."

New applicants for employment will some times look askance at you when you enquire about the safety conditions and practices in the plants they have just left, as if they never heard of such things. It has often been said that the rank and file of any organization radiates the spirit of its leaders.

If this is so, leaders of industry cannot delegate the problems of safety to some individual in the plant, and then make it impossible for him to work these problems out by withdrawing their moral and financial support, without this spirit reaching every person in the organization.

Belief, however, was expressed by the speaker, that there are few organizations today that are insincere in their efforts to prevent accidents. The history of the safety movement and the results attained during the past twenty-odd years of its existence, have proved that the modern executive is turning his thoughts more and more to the improvement of conditions within his plant, which will tend to provide better and safer conditions for the personnel of his organization.

Types of Minds. On the assumption then, that "Plant Mind", as created by the officials, holds a priceless value on the human life, Mr. Gleason cited Webster's definition of "mind" as a noun, being the "power of remembering, retention in memory, consciousness of thought", and in these the reasons for accidents occurring; as a transitive verb meaning "to remember, to call to mind, to put one in mind of," and in the work of preventing accidents, this refers directly to the person in charge of safety.

If all had minds that functioned 100 per cent perfect, there would be very few accidents. Since this cannot be hoped for, it remains for all to keep awake that consciousness of thought of help for each other. Many accidents occur because the foreman in charge of an operation, whose mind is much clearer as to what is the safe way, fails to consider the minds of the persons who receive their instructions, and takes it for granted that they know the safe way, and this sometimes results in an accident.

An example of one type of mind is he who feels that safety is meant for the other fellow, but is of no value to him. Yet another is the new man whose mind has not had time to grasp all the details and conditions of his work, and is injured before his mind has become accustomed to the existing hazards. Another type is the man whose mind has never been trained in the simple rudiments of safety, who was in the industry before its teachings were taken up in the schools. The teaching of the fundamental principles of safety in schools should insure a class of workers in future years who will be less liable to be injured in the first few months in industry. Every safety man should devote some time to the furthering of this educational work. Again there is the man with a troubled mind who has always been a careful workman and free from accidents on the job, but through sickness of himself or family, finances or other causes, brings his cares to work with him, and in this state of mind contributes to accident causes.

Developing Plant Mind. The best means of bringing to the attention of employees these conditions which are to be guarded against, said Mr. Gleason, is by developing Plant Mind. Safety guards are the first and most important step in developing Plant Mind, as they are a silent testimonial to the value placed on human life by the officials. Workmen's safety committees, when they function properly, provide many new safety ideas, and represent the point of view of the employees on conditions and safe practices. Bulletin boards, motion pictures and foreman's safety school lectures, afford educational facilities for correcting unsafe conditions and practices, and help to acquire right thinking or training of the mind.

One industry has established a bulletin board reading service where one page of a book is published every day. Continuing this idea with the publishing of the life history of Gene Tunney, Roger Hornsby and other recent heroes of the sport world might be the means of attracting persons to the bulletin board who now take no interest in them.

Safety contests and first aid meets, athletic contests between mills, picnics and community safety rallies provide keen interest in striving for certain goals. Employee's magazines or houseorgans tend to keep the safety message alive in the minds of employees.

Suggestion systems by which employees may express their ideas regarding improvements in manufacturing processes and be awarded in proportion to the savings effected by them, is a good way to develop Plant Mind, and keep employees thinking. Paid vacations which give employees bigger and broader views of life, group insurance and pension plans which relieve worries of approaching old age, are means of maintaining happy working minds.

Consultations in the first aid or medical department for employees threatened with ill health should be arranged, and in some cases it may be possible to relieve financial difficulties arising from unexpected operations, dentist bills, etc. by establishing credit service which will allow payments to extend over a period of time.

The keynote in building up Plant Mind, Mr. Gleason said, is to establish individual thinking as well as organized plant thinking, so that employees will do their work in such a cheerful and happy manner that they will forget the cares of home

and worries of the job. Safety has been described, he said, as just plain, every day, honest-to-goodness, common sense.

Mr. Walter L. Mead of the Consolidated Water Power and Paper Co., Wisconsin Rapids, Wis., was introduced by the Chairman. Mr. Mead remarked that the idea of safety has been sold to management to the extent that one does not have to talk hard and long about safety facts in this day and time, because managers know that safety is a practical and sensible thing. Mr. Mead said that production was the manager's first thought in the beginning and now safety is on the same plane as production.

T. Linsey Crossley was again called on for the purpose of having him tell something about the five volumes of the Manufacture of Pulp and Paper put out by the Canadian and American Pulp and Paper Technical Associations. Mr. Crossley gave a very clear and complete report of the extent of which these valuable books are being used.

The Old and the New in Paper Mill Safety

In the absence of Jacob Kindelberger, president of the Kalamazoo Vegetable Parchment Co., the subject on the program entitled "The Old and the New in Paper Mill Safety" was discussed in a most entertaining and informative way by C. E. Jackson, mill manager of the Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis. The subject presented the opportunity for a radical comparison between old and new safety methods in the paper industry, and the speaker optimistically remarked that the old time methods were not as reprehensible as they are usually pictured. Our fathers in the paper game were in many respects very knowing and reasonably progressive. "There is a tree in California still bearing leaves," said Mr. Jackson, "which has stood since the year 2000 B. C. A living thing of that age must certainly laugh in contemptuous amusement when it hears men referring to twenty years ago as the 'dark past.'" To substantiate the fact that there is really "nothing new under the sun," history was reviewed briefly to show, as an instance, that while Columbus is spoken of by many as the first man who ever ventured the thought that the earth was round, 350 years before Christ the library and museum at Alexandria contained 700,000 volumes and was full of studies in astronomy and mathematics, and contained more globes than can now be found in the average state university. The history of the Spartans records their ideals of physical supremacy and that sickness, injury, imbecility, old age and other infirmities were punishable by death.

Twenty years ago in the paper industry was really only yesterday. It is true they had no compensation laws to serve as an impetus for intensive, scientific accident prevention, but in the interests of self preservation they possessed many of the fundamental things. Safety valves on boilers, spiked feet on ladders, gear guards, trip valves and stair railings were not at all uncommon.

Machinery Improvements Bring Safer Conditions. Mr. Jackson referred to the statement made by a member of the Consolidated organization whose viewpoint was solicited for the reason that for forty years he has been an enthusiastic supporter of anything and everything which has to do with the prevention of injuries in their mills. His wise reflection was that "one of the principal reasons why paper mills are safer today than they were years ago is because the improvement and perfection of machinery, from the standpoint of higher production and efficiency, carries with it a safer condition for operators." The truth of this statement is obvious for the truth that mechanical efficiency carries safety with it. The modern, up-to-date type of paper mill equipment, even though higher speed is a feature, contains protection for workmen which machinery of former days did not have. The locomotive crane has done away with hand unloading and has eliminated many of the accidents which were formerly a common occurrence in log yards. Oil switches on power house switch boards, circuit breakers, concrete flooring, automatic stokers and the well known drum barker which supplants the old knife barker which took such extensive toll, are examples of improvements which were not planned specifically in the interests of accident prevention. On paper machines, the operator shoots the paper from the wire to the reel by air and in the present age we see very few calender fingers. The drum reel is rapidly driving out the old-time stack reels which caused injury and death to paper makers. Twenty years ago, paper mill machinery was driven by line shafting, belts and pulleys, and the cause of many tragedies. Today, the up-to-date mill machinery is driven direct from motors. There is no shafting and there are no pulleys to threaten human lives. High speed paper machines today have separate individual motors on each press, on each section of the dryers and on the calender stack. These motors are synchronized, giving uniform speed. The modern paper machine is a picture of convenience and safety.

Beyond these, there are countless things which offer further contrast between the old days and the new, Mr. Jackson said, things which are the result of deliberate premeditated Safety action. They constitute impregnable proof that accident prevention is an institution, a tangible science and the product of trained minds: pulmotors, goggles, square D switches, rubber gloves, double hand control, illumination standards, gear guards, belt guards, saw guards, elevator gates, railings, runways, toe boards, distant control of blow-off valves, winder guards, cleanliness, sanitation, and finally Safety habit and Safety discipline.

The Business of Safety. Speaking of the psychological aspect of Safety, Mr. Jackson quoted the familiar adage, "Business is Business," and advised that it be applied to industrial relations. The relation between employer and employee is a business relationship. Paternalism is passe. The worker sells his services; the employer buys them, and each should give value received. The Safety movement should be treated as an immensely practical matter. There has been too much college spirit. In a great many cases, Safety has been made a travesty rather than a factor in production. It should be treated in a hard-boiled, business-like manner, on the same basis as boiler evaporation, stock hydration and Mullen test. It is no wonder that the Safety man has been looked at suspiciously by the old timers, and hailed with jeers as a busybody, a reformer and a tenderfoot. Men do not want to be children. They do not want community singing in the interests of Safety any more than in the interests of boiler house efficiency. If a foreman has not learned that the prevention of mutual losses through injury are just as much a part of his job as to keep machinery from going to pieces, he never should have been made a foreman. A good foreman is not a man who gets low production, low quality, or kills off his men. Business is business.

Safety Contests. Mr. Jackson made brief mention of his views about contests, remarking that perhaps the proof of the pudding is in the eating, and that the results might be evidence of a correctness in theory. There is a danger, however, that in some cases the safety contest might serve as a temptation to keep unfit men at work. If a man breaks his neck during a Safety contest, the stigma attached to it is greater than if he had postponed the incident until after the race is over.

Individual Responsibility. Safety is an essential factor in operation and production, he said. Effective management with its force of discipline and its business transactions with employees will demand Safety as a feature of good service. Accidents are inexcusable, economic losses. A concern which kills and maims its men cannot survive with a competitor who avoids it. Aside from the humanitarian aspect of the question which needs no discussion, the fact is that the employer loses profits every time an injury occurs, regardless of his own negligence. Therefore, he rightfully demands that each man in the plant be awake to his individual responsibility.

In the Consolidated mills, negotiations are made regarding wage contracts and working conditions with representatives of the employees. Dealings with organized labor have never prevented the introduction of progressive labor policies. The elimination of incompetent help has never been deterred. Mill rules are adopted mutually, discipline is enforced by common consent, and infraction of Safety rules is a serious offense in the eyes of management and men. The routine method of accident prevention is similar to that in other companies. There are regular periodic inspections by competent men. Reports are turned in and the work followed up. In the event of an accident, rigid inquiry

is made as to the cause. A conference is held, attended by the personnel manager, mill manager, employment manager, foreman and if possible by the injured man himself. Those who witnessed the accident are brought in. This tends to prevent a recurrence of that particular type of injury.

Mr. Jackson here cited some figures to prove that Safety in industry has taken on a scientific color and produced most potent results. Every branch of manufacture has shown radical improvement from year to year. The paper industry ranks high among them all. The Consolidated mills have experienced a reduced number of accidents and a reduced number of days lost every year for the past six years. In 1925, the number of lost time injuries was reduced by 30 per cent and the number of days lost by 40 per cent. So far this year, the number of days lost is about 50 per cent of last year's total.

Prohibition and Safety. Prohibition has furthered industrial safety. Mr. Jackson said that while he knows little about the politics of prohibition, stating that it is possibly true that jails are more crowded and perhaps young people are drinking more than before, on the other hand we must not take anti-prohibition propaganda too seriously. One thing is indisputable: industry is better off; workmen are more prosperous; their hands are steadier and their heads clearer. There is less drinking among paper makers and the result is a higher and more intelligent type of man. In the old days, whisky and accidents walked hand in hand.

Luncheon

Following the presentation of the silver loving cup, and prior to taking a vote on the holding of another contest in 1927, Mr. John Lundrigan, International Paper Co., New York City, rose to say some things of interest to the pulp and paper manufacturers. Mr. Lundrigan touched on a matter affecting the contest before the motion was put. The International Paper Co., over all of whose mills Mr. Lundrigan is safety director, has not yet taken part in either of the safety contests. They have an efficient safety organization that has been functioning since 1917, but they believe, said Mr. Lundrigan, that the manufacturers and those directed in the efforts of accident prevention are making a very serious mistake in adopting the existing so-called standard scale of time losses for deaths and permanent disabilities. Mr. Lundrigan remarked, "I don't know whether any of you have ever stopped to think what the open acknowledgment of a day's penalty charge for a fatal accident means, as compared with the possible enactment of the compensation law, or its minimum, rather. It means you are committing yourselves; it means you are acknowledging that 6,000 days, or what amounts to twenty years or $20,000 in money should be the moral and legal penalty for them.

"The International Paper Co. has had a standard which we so far have declined and will continue to decline to exchange, and that is a 1,000 day penalty which represents the best actual cost figure that anyone is able to secure, as to what the money cost so far as compensation is concerned, of an industrial accidental death. I am going to plead with the committee who may have something to do with making the arrangements for this contest so they will consider the advisability of changing that particular penalty. Now, I realize that the losing of 1,000 days and the penalty is just as likely to deprive you of the possibility of winning a prize, but I believe that it isn't so much a case of winning the prize; it is a case of helping to run the race. Therefore, the thing that we want to do is to demonstrate that we are willing to carry out this program of accident prevention and stimulate the contest along practical lines.

"I believe," Mr. Lundrigan said, "You are practically legalizing and establishing an arbitrary penalty that industries cannot stand and that will discourage and does discourage the small operator from giving the support and co-operation that he might otherwise give to this movement."

The gist of Mr. Lundrigan's remarks was a plea to change the scale of time losses for deaths and permanent total disabilities in the future contest from 6,000 days maximum loss to 1,000 days maximum loss, the percentages of permanent total to remain as they now are, only computed on 100 per cent being representative of 1,000 days instead of 6,000 as it now is.

A motion was made that the 1927 PAPER INDUSTRY Contest, dealing with lost time accident experience, should have the penalty of 1,000 days in the case of fatal accidents, instead of 6,000 days used heretofore. The motion was unanimously adopted.

Another Contest in 1927

There will, therefore, be another contest sponsored by THE PAPER INDUSTRY beginning January 1st, 1927, to which the above mentioned revised scale of time losses will apply.

The mills will be divided into three groups: Those of 200 employees and less in Class C; those having 201 to 500 employees in Class B, and those having 501 employees and more in Class A.

A trophy will be presented to the winner of each group and a championship trophy to that winning mill whose record will be judged the best, considering all contributing conditions. This selection will be made by a board of disinterested judges.

Complete details of the contest will be sent to the members of the Section in ample time for them to get started on time. They will also appear in the December issue of THE PAPER INDUSTRY.

Those in Attendance

Adams Bag Co.—J. F. Grazer, Chagrin Falls, Ohio; **Alton Box Board & Paper Co.**—C. G. Patterson, H. C. Sackett, Alton, Ill.; **American Zinc Co., of Tenn.**—P. M. Arthur, Mascot, Tenn.

The Beveridge Paper Co.—O. E. Blanford, Indianapolis, Ind.; **Bryant Paper Co.**—Mrs. M. Buckingham, Kalamazoo, Mich.

Casualty Engineer—C. J. Strobel, Philadelphia; **Champion Coated Paper Co.**—Kenneth L. Faist, Hamilton, Ohio; **The Champion Fibre Co.**—T. L. Jamison, G. W. Phillip, S. W. Plott, Bob Varner, C. N. Wright, Canton, N. C.; **Chief Sanitary Inspector**—Alex R. White, Toronto, Ont., Can.; **Consolidated Water Power and Paper Co.**—Leo. J. Barrett, C. E. Jackson, Walter L. Mead, J. J. Plzak, Wisconsin Rapids, Wis.

Detroit Sulphite Pulp & Paper Co.—Ernst Gaschwender, Detroit, Mich.; **Director Safety Dept.**—H. T. Bond, Marreror, La.

Esleeck Mfg. Co.—John L. Gibson, Stuart Winch, Turners Falls, Mass.

Falls Mfg. Co.—Wm. Beninghaus, Hugo Boldt, H. A. Korth, Oconto Falls, Wis.; **Fort Howard Paper Co.**—Ameil Umberham, Green Bay, Wis.

Robert Gaylord, Inc.—Ed. Ahrenhoerster, St. Louis, Mo.; **Great Western Paper Co.**—E. A. Kennedy, Ladysmith, Wis.; **Hammermill Paper Co.**—W. A. Gleason, Jacob B. Lind, J. J. Little, Walter Packard, Erie, Pa.; **Hercules Powder Co.**—M. G. Milliken, Parlin, New Jersey; **Hollingsworth & Vose Co.**—Mat. F. Bartlett, Boston.

Indemnity Ins. Co. of North America—S. J. Steinmann, L. G. Wood, Philadelphia; **Industrial Laboratories, Ltd.**—T. Linsey Crossley, Toronto, Ont., Can.; **Interlake Tissue Mills Co.**—C. Nelson Gain, Merritton, Ont., Can.; **International Paper Co.**—Daniel T. Meany, John Lundrigan, New York City.

Kimberly-Clark Co.—Edw. J. Goodman, M. G. Hoyman, A. W. Redlin, Neenah, Wis.; Arthur W. Hoffmann, Niagara, Wis.; F. A. Robinson, Niagara Falls, N. Y.

Lincoln Pulp and Paper Co., Ltd.—J. R. Leslie, Merritton, Ont., Canada.

Marinette & Menominee Paper Co.—L. Larson, Marinette, Wis.; **Mead Pulp & Paper Co.**—L. O. Bonner, J. E. Collins, Chillicothe, O.; **Michigan Mutual Liability Co.**—Ed. H. Vaniere, Detroit.

National Carbon Co., Inc.—A. J. Herrin, Niagara Falls, N. Y.; **Nekoosa-Edwards Paper Co.**—F. H. Rosebush, Port Edwards, Wis.; **Northern Paper Mills**—W. J. Peacock, Green Bay, Wis.

Ontario Pulp & Paper Maker's Safety Assoc.—A. P. Costigane, Toronto, Ont., Canada.

The Paper Industry—A. Scott Dowd, Chicago, Ill.; **Peerless Div.-Mead Pulp and Paper Co.**—C. W. Twitchell, Dayton, Ohio; **Port Huron Sulphite and Paper Co.**—James J. Hastings, Port Huron, Mich.; **Provincial Paper Mills, Ltd.**—F. M. H. Cushing, Thorold, Ont., Canada.

The Richardson Co.—Wm. A. Heilemann, Melrose Park, Ill.

Sec., Safety Committee—Ben Wahl, Detroit, Mich.; **Scott Paper Co.**—Edward J. Gayner, 3rd, Chester, Pa.; **Sorg-Ogles-**

by-Smith Paper Co.—H. H. Faries, D. D. Thirkield, Middletown, Ohio; Standard Accident Ins. Co.—Edward W. Bidigare, C. R. Blackburn, Detroit, Mich.; Herbert A. Raseh, Milwaukee, Wis.; L. C. Long, Watertown, N. Y.; E. S. Shartzer, Utica, N. Y.

Tennessee Copper Co.—H. T. Harper, Copperhill, Tenn.; Travelers Ins. Co.—C. Fred Wolf, Hartford, Conn.

Union Bag & Paper Corp'n.—Stuart H. Brown, New York, N. Y.; United States Casualty Co.—O. J. Smith, New York City, N. Y.

West Virginia Pulp and Paper Co.—Walter D. Bauer, Tyrone, Pa.; R. S. Turner, Mechanicville, N. Y.

N. Y. State Superintendents Meet at Syracuse

Welcomed to College of Forestry by Acting Dean Brown and Faculty of Papermaking School

THE Northern New York Division of the American Pulp and Paper Mill Superintendents' Association, which takes in all pulp and paper mills north of Albany, N. Y., held a meeting at Syracuse, N. Y., on Saturday, October 9, and visited the school of papermaking of the New York State College of Forestry at Syracuse University, where they were received by Acting Dean Nelson C. Brown, Prof. C. E. Libby, and others of the faculty. Headquarters were established at Hotel Onondaga, Syracuse.

Chairman William Brydges, of the Defiance Paper Company, Niagara Falls, presided at the opening sitting of the division in Hotel Onondaga, at 10 o'clock on Saturday morning, when he outlined the program and gave a glowing account of the course in papermaking conducted at the College of Forestry. Motor touring coaches had been placed at the disposal of the members for the trip from the hotel to the campus and soon all were on the way. The members were met at the college by Prof. C. E. Libby and former Prof. H. E. Weston, who exhibited some of the reports of students relating to different branches of advanced pulp and paper work, including accounts of work done in mills during employment periods. Each student at the College of Forestry who majors in the work of the pulp and paper course is required to spend at least six months in a pulp or paper mill as a prerequisite for graduation, and a written report of his experience must be presented and approved by the college before credit is allowed for the practical experience requirement.

Why Syracuse Was Made Meeting Place

Before being shown over the pulp and paper laboratories, which are situated in the basement of the College of Forestry building, the visitors were lead to the Assembly or Convocation Hall, where a short talk was given by Chairman Brydges prior to introducing Acting Dean Brown. He said that the city of Syracuse had been selected as the place of annual meeting partly on account of its central location to the mills in membership, but principally because it was the home of the school of papermaking of the State College of Forestry. Every superintendent of a pulp or paper mill was intensely interested in the education and training of future papermakers as well as reforestation and the conservation of natural resources, the other subjects taught at the State College of Forestry.

Mr. Brydges touched on some of the accomplishments of the Superintendents' Association, singling out for special mention the war on waste in the industry. It was most necessary, he said, in these days of keen competition, to eliminate waste completely, and there must be no relaxation of effort.

New Era Brings College and Industry Together

Prof. Nelson C. Brown, who is acting dean of the New York State College of Forestry during Professor Moon's absence in Europe, was then introduced and addressed the visitors. He said he considered it a great compliment for the Superintendents' Association to visit the college and was sure that some helpful criticism would result. At the same time he was confident that the school of papermaking was in most capable hands under Professor Libby, who was himself a papermaker. The fact of their presence (meaning the superintendents) was in itself significant of the breaking down of outworn traditions, because it meant that industry and the colleges were coming closer together. Among the ten or twelve departments of the school interested in forestry proper, none was so important as the pulp and paper industry. He said he was glad the superintendents had come to visit the college, hoped they would get something out of it and come again.

The next speaker was Prof. C. E. Libby. His subject was "The Alliance of the University and the Paper Industry," but before proceeding to the main subject of his address he touched on the historical aspects of papermaking, mentioning the early apprenticeship system of training. The progress of papermaking had been slow as compared with the other industries. The beating engine, nearly 200 years old, was used today in substantially its original form. It was the same with the fourdrinier machine. He contrasted this with developments in transportation, instancing the submarine and airplane; communication, with the telephone and radio; textiles, with the development of artificial films and fibers and the ingenious and intricate mechanisms necessary for their production.

Laziness or Ignorance

Did the Fourdrinier Brothers invent a machine so nearly perfect that it could not be improved, or was Benjamin Tilghman a genius who selected 50 years ago from 100,000 chemicals the only compounds suited for the reduction of wood to pulp? Were the old-time papermakers too lazy or too lacking in knowledge to develop new equipment or improve processes?

Professor Libby thought the universities should have taken the situation in hand by sending a few of their best graduates into the industries, juggling processes and equipment in a test tube and starting the industry off on a new tack.

There were only six industries which surpassed the paper industry in size according to value of manufactured products. He mentioned agriculture, textiles, metals and lumber as some of the leading industries that were better off than the paper industry in the facilities available for educational training. The University of Maine and the New York State College of Forestry were, he said, the only two institutions in this country giving any specialized work in pulp and paper manufacture and in each case only a single department of the institution was devoted to this instruction.

Old Notions About College Training

The place of the technical man in the industry was still a subject of contention. It was not so long ago that the practical man regarded a college trained chemist or engineer as a piece of bric a brac and about as useful as sulphite pitch. On the other hand, the chemist looked upon the practical man as an old fool whose ideas were out of date and who was furthermore a stumbling block to the application of science in papermaking in large doses.

Professor Libby remarked it was not strange that under such conditions, the paper industry did not petition universities to establish courses of training and send on galloping squadrons of chemists and engineers.

Graduates in Demand

The situation had improved a great deal as he knew by the increased number of permanent positions in the paper industry that were offered to graduates of the pulp and paper courses in the State College of Forestry. This year there were four positions available for each member of the graduating class, so it was evident that the graduates were proving their value and adaptability to conditions in the industry.

In closing, he made an earnest plea for the co-operation of mills in New York State to help the college to meet the experience requirements of students by providing summer employment. If the college could secure the pledge of twenty-five mills in the State to employ one or two men each summer for a period of three months, the problem would be permanently solved. He gave some statistics relative to the distribution of pulp and paper students at the College of Forestry. The total registration or number of men matriculated was sixty-five, approximately 20 per cent of the total registration of the college. The pulp and paper course at the

New York State College of Forestry is only six years old, yet among the graduates it counts one general manager, several assistant managers and superintendents, numerous chief chemists and various minor officials in the paper industry.

Summer Employment to Be Provided

Many questions were asked by superintendents, and Professor Libby received the assurance of several that summer employment would be provided for all of the students of the State College of Forestry. Some of the members, as for instance Levi J. Fralick, of the Algonquin Paper Company, suggested sending letters both to superintendents and executives in regard to the work of the school and the summer work requirements.

Committee on Nominations

A short business session was conducted before the members left the assembly hall to inspect the paper laboratory in the basement of the college. A Committee on Nominations was appointed to choose officers for the ensuing year. Michael J. Argy was named chairman, with William Cathcart and David M. Kelly as associates. On account of the promotion of Frederick J. Rooney from secretary of the Northern New York Division to president of the national organization, Frank Johnson, of the Diana Paper Company, Harrisville, had served as temporary secretary.

The keenest interest was taken by the members in an inspection of the paper laboratory and the experimental pulp mill department. A comprehensive description of the equipment was given by Professor Libby in THE PAPER INDUSTRY for August, 1923.

An Enjoyable Luncheon Party

The luncheon at the Hotel Syracuse to which the members of the Northern New York Division were invited as the guests of the Syracuse Supply Company was one of the most enjoyable events ever staged under the auspices of a local branch of the American Pulp and Paper Mill Superintendents' Association. It reflected credit alike on the Syracuse Hotel and the thirteen manufacturing firms represented by the Syracuse Supply Co., who were the actual hosts. Harry L. Vuillemot, assistant treasurer of the Syracuse Supply Company, was especially active in looking after the comfort and entertainment of the guests. Percy Ridings, vice-president and general manager, was also there, supported by the managers of the different departments, including H. E. Torell, mill supply; Walter H. Scott, steam and iron; "Bill" Birdsall, machinery; "Del" Geyer, electrical, and "Jake" Dietz, leather belting. Mayor Hanna of Syracuse was there to welcome the visitors, a courtesy which was greatly appreciated.

Luncheon Souvenirs

There were seventy-five superintendents and guests present at the luncheon. Interesting souvenirs were distributed, each guest being presented with a combined 4-inch rule and metal pencil, the gift of the Quaker City Rubber Company, Philadelphia; leather match safes equipped with alundum scratch paper were presented by the Norton Company, Worcester, Mass., and fancy sleeve links from the Columbian Rope Company, Auburn, N. Y.; the Quaker City Rubber Company also left the gift of a "Mystic Oracle," which answered questions mechanically in a most mystifying and baffling manner.

Chairman Brydges asked National President Fred J. Rooney to express the appreciation of the members for the generous hospitality of the local firms, which he did in a speech of great eloquence. In addition to music and singing which was greatly enjoyed, there were recitations and story telling by a quartette, and C. M. Ripley, of the General Electric Company, contributed to the entertainment with an up-to-date story concerning George Bernard Shaw and Miss Isadora Duncan.

Illustrated Talk on Oil Pipe Lines

At the afternoon session, which was called to order by Chairman Brydges shortly after 2 o'clock, William S. Price, special representative of the Tide Water Oil Sales Corporation, showed a series of motion pictures of the operations of the company, including their extensive system of piping and pumping. The relative merits of brick grease, soft grease and oil for special purposes were explained by P. F. Cassidy, industrial lubrication engineer of the Tide Water Oil Company, in response to questions by John H. O'Connell, of the Diana Paper Company.

Curious Experiences with Beaters

B. W. Bennett, vice-president and secretary of Dilts Machine Works, Fulton, N. Y., gave a most interesting account of experiences and contacts with mill superintendents in relation to the building of beating engines. He said that today customers wanted service with a capital S. Repeat orders were especially valued on the principle that the endorsement given a machine when a customer places a second or third order was the best possible advertisement, so if the Dilts Machine Works gets word that in No. 7 beater, for instance, the roll has an end motion, or No. 6 will not dump clean, a representative is dispatched to that mill with the least delay possible.

Wobbly Beater Rolls

Mr. Bennett mentioned some of the troubles with beater rolls. Wobbling or end motion was common and was not always the result of defective workmanship. Mr. Bennett mentioned that a short time ago a report was handed in showing that one of the Dilts beater rolls had half-an-inch end motion at each revolution. As he explained it, half-an-inch is quite a lot and it was decided to send a man to the mill to investigate. It was found that the beater engineer had put a brace from the end of the spindle to a post. Objection was made to taking out the brace, but after it was removed the end motion of the roll was found to be only 1/16th inch. On examining the drive, the pulley on the line shaft was found to be not running true and it was this that caused the beater roll to run out.

Faulty Line Shaft

In another mill from which a similar complaint had come, it was found that four beaters, including the Dilts, were being driven from a line shaft in the basement. The superintendent asserted that the troubles could not possibly come from the line shafts, as this had just been put in and was new. It developed, however, all four beaters had the same end motion, which of course caused the trouble in the beaters. It is sometimes possible to correct end motion in a beater roll by reversing the belt.

A defective foundation under the beaters led to breaks in spindles. When a suitable support had been built no more breakage resulted.

Mysterious Trouble

A curious instance of trouble was told by Mr. Bennett. A small tissue mill with a narrow machine and one Dilts beater would operate satisfactorily for a few days at a time, then without warning there would be difficulty in making a good sheet. No loose bars could be detected in the roll and everything about the beater appeared to be in good order. It was rather mysterious until Mr. Bennett made the discovery that the beater was set on top of a wooden flume. When the water was up, the foundation was in one place and when the water was down it was somewhere else. The beater was reset on a firmer foundation and all troubles disappeared. Other experiences in the operation of beaters were instanced by Mr. Bennett as follows:

Trouble in a Roofing Felt Mill

"One mill, this time a roofing felt mill, had continual trouble with broken fly bars and occasionally a broken lighter bar in their beaters. We worked with their superintendent to locate the trouble, analyzed the steel in the bars, supplied steel instead of cast iron lighter bars, had the rags cut finer before going into the beaters, shifted beatermen, changed the method of furnishing the rags into the tub, but still they kept breaking fly bars and once in a while a lighter stand. Then they found that their repair man had not been keying the bed plate boxes firmly into place and the bedplates would tilt, throw the roll and the damage would result. It was easy to remedy this once they located the trouble.

"Another roofing mill had no concrete under their bedplates. The contractor at the mill had set up their beaters and scrimped on cement, and before they knew it, the mill had serious trouble from breakage. You know in a roofing mill

they have to run their rolls right on their bedplates and they must have good foundations.

"We have odd experiences ourselves. Once we had a complaint of a roll out of true and we found that the beater roll had fallen off the cars in transit to the mill. The train had gone around a curve too fast and the beater roll had rolled off the car and into the ditch. The wrecking crew had put it back on the car but the spindle was cracked and the roll ran out of true. We repaired it and the railroad company paid for it.

"At another mill we pinned the spindle straight. This was an old beater not of our make and the shaft was sprung. The men at the mill ridiculed our mechanic trying to straighten a 12-inch shaft with a machinist's hammer, but he did it. This was a cast iron spindle, not a steel one.

Production and Roll Speed of Beaters

"The speed of the beating engine is something that we believe receives too little attention, and we would like to have more data on production of beating engines at different roll speeds. We did have opportunity a few months ago to compare the circulation of stock with the roll speed in a beater which was driven by a variable speed engine. We slowed the roll down to 60 r.p.m. and timed the circulation of stock. We took similar timings at 70 revolutions, 80, 90, 100, 110. We found that the circulation of the stock built up very rapidly as the roll speed increased from 60 to 90. That from 90 to 110 there was very little change, and that above 110 the stock circulation increased but not as fast in proportion as it had with the roll running from 60 to 90. The conclusion we draw from this experiment is that you can obtain satisfactory circulation of stock at from 90 to 110 r.p.m., but that above this figure faster circulation is obtained at a wasteful expenditure of power. In other words, if speed of circulation is all that is to be desired, this can be obtained with the roll running 90 to 95 r.p.m., as well as 110 r.p.m., and with a saving in power of possibly 15 to 20 per cent. Of course, this is a single instance and similar results might not be obtained in other beaters with different furnish or different treatment of the stock. We would be very glad to have more data of tests along this line."

Mr. Bennett discussed the question of speed of circulation in beaters. The company refashions many old-type beaters to a faster circulating type. There was no magic or mystery about this. It meant redesigning the tub and hood, properly timing the speed of the roll and adapting the beater to the class of stock to be handled. The circulation, capacity or efficiency can often be improved 100 per cent in this way.

Hydration Problems

In reply to certain questions by John H. O'Connell, Mr. Bennett asked his engineer, J. D. Haskell, to carry on the discussion, especially in regard to hydration problems. Frank M. Williams insisted that in discussing hydration in the beater this ought to be confined to certain papers. There was no beating action in newsprint manufacture, for instance, the beater acting simply as a mixer. Specific problems in beating should be studied separately, he said.

The report of the Committee on Nominations was presented by Michael J. Argy, chairman. He said that in view of the excellent work which the present board of officers had rendered during the past year, it was the sense of the committee that they be re-elected to serve another term, and appropriate action was taken, National Secretary Robert E. Eminger casting an affirmative ballot for the following list:

William Brydges, Defiance Paper Company, Niagara Falls, N. Y., Chairman.

H. E. Rockwood, Champion Paper Company, Carthage, N. Y., First Vice-Chairman.

George K. Walker, Finch, Pruyn & Co., Glens Falls, N. Y., Second Vice-Chairman.

A. G. Wightman, Knowlton Bros., Inc., Watertown, N. Y., Third Vice-Chairman.

Frank Johnson, Diana Paper Company, Harrisville, N. Y., Secretary-Treasurer.

Meeting Closed with Banquet

The meeting closed with a banquet in the evening at the Hotel Onondaga. John H. O'Connell was toastmaster and introduced National President Fred J. Rooney, who brought the greetings of the national officers. He said that the Superintendents' Association had been organized for increasing efficiency in the operation of pulp and paper mills through the reading of papers and discussions at meetings. Problems should be discussed fully and freely without divulging any secrets. He said that the association was working on a program that included consideration of three important problems —vocational education; constructive work by the mechanical and chemical pulp committee, and work of the practical problems committee, of which Carl Magnus is chairman. The last named committee will act as a clearing house for bond, book, board and writing mill men.

After Burr N. Johnson had delivered a humorous talk on "How to Live on 24 Hours a Day," Charles M. Ripley, of the General Electric Company, took the members on an airplane trip over the Alps by means of a series of snapshots taken from the air. He told those present that Europe was far ahead of the United States in airplane development but far behind the United States in progress of the automobile industry. His illustrated lecture was greatly appreciated. A large number of reels were unwound to the accompaniment of sparkling stories by Mr. Ripley.

In Attendance

Among those who registered as in attendance were the following: John Aitken, Great Bend, N. Y.; M. J. Argy, Sr., Cliff Paper Company, Buffalo, N. Y.; M. J. Argy, Jr., Cliff Paper Company, Buffalo, N. Y.; E. S. Baker, Rowe Paper Company, Syracuse, N. Y.; W. C. Bloomer, Bloomer Brothers Company, Newark, N. Y.; J. H. Brougham, Foster Box Board Company, Utica, N. Y.; William Brydges, Defiance Paper Company, Niagara Falls, N. Y.; William Cathcart, Walloomsac Paper Company, Walloomsac, N. Y.; T. L. Dunbar, Stebbins Eng. & Mfg. Company, Watertown, N. Y.; Robert L. Eminger, Miamisburg Paper Company, Miamisburg, Ohio; R. F. Englehardt, United Paper Board Company, New York; L. A. Fralick, Algonquin Paper Corporation, Ogdensburg, N. Y.; F. A. Johnson, Diana Paper Company, Harrisville, N. Y.; Thomas J. Keenan, The Paper Industry, New York; D. M. Kelley, Bloomer Brothers Company, Newark, N. Y.; A. J. Kennedy, Sandy Hill Iron and Brass Works, Hudson Falls, N. Y.; W. J. Livingston, Dexter Sulphite Pulp and Paper Company, Dexter, N. Y.; Milton J. Maguire, Empire Size and Chemical Corporation, Albany, N. Y.; Henry J. Merder, Utica, N. Y.; J. H. O'Connell, Diana Paper Company, Harrisville, N. Y.; C. R. Outterson, Syracuse, N. Y.; E. L. Outterson, Carthage, N. Y.; Samuel Pentington, Greenwich, N. Y.; L. D. Post, Paper Mill, New York; Max V. Poyck, Heller & Merz Company, New York; P. L. Realick, Rotosplay Manufacturing Company, Syracuse, N. Y.; J. W. Rice, W. C. Stebbins Company, Syracuse, N. Y.; Percy Ridings, Syracuse Supply Company, Syracuse, N. Y.; Harry E. Rockwood, Sherman Paper Company, Great Bend, N. Y.; Fred J. Rooney, Upson Company, Lockport, N. Y.; R. B. Ross, Johns Manville Company, New York; Fred Royce, Underwood Paper Mills, Inc., Plattsburg, N. Y.; James Salter, Victoria Paper Mills Company, Fulton, N. Y.; Edward Simonson, Buffalo, N. Y.; R. A. Thompson, The W. S. Tyler Company, Cleveland, Ohio; H. E. Torell, Syracuse Supply Company, Syracuse, N. Y.; Charles Trabue, Gutta Percha Rubber Manufacturing Company, Brooklyn, N. Y.; George W. Tripp, Treadwell Supply Company, Watertown, N. Y.; Washburn Weston, American Wringer Company, New York, N. Y.; H. E. Weston, Thos. H. Savery, Jr., Chicago; A. G. Wightman, Knowlton Bros., Inc., Watertown, N. Y.

As a result of demand from the trade, the Link-Belt Company, it has been announced, has extended the horse power range of their silent chain drives available from distributors' stocks, from its present scale of ½ to 10 h. p., in practically any reduction from 1 to 1 up to 7 to 1, up to 15 h. p. This is the first change made by the Link-Belt Company, in the original plan of stock drives distribution, but does not in any way interfere with engineering drives.

The San Juan Pulp Manufacturing Company's plant at Bellingham, Washington, has started operation with about $300,000 invested in construction and equipment.

Northwestern Supers Hold Fall Meeting

Mill Visits, Addresses and Discussions, Followed by Banquet and Entertainment Make Full Day

A VERY interesting as well as profitable convention of the Northwestern Division of the American Pulp and Paper Mill Superintendents Association was held at Green Bay, Wis., on Saturday, Oct. 16, 1926. It was the second convention of the year, the spring meeting having been held in Wausau.

With approximately 100 persons present, the attendance was the largest ever observed in the division by R. L. Eminger, national secretary, according to his own announcement at the meeting. He was the guest of honor at the division convention. Several excellent papers were read and they resulted in spirited discussions.

The only criticism expressed at the sessions was that some of the superintendents considered the one-day convention entirely too short. Since the forenoon was taken up by visits to the paper mills of Green Bay, there was only the afternoon left for the program of addresses and discussion. The evening session consisted of a banquet followed by other entertainment.

Official Election of Officers

An election of officers was held at this conference, according to schedule. It has been the practice of the division to elect its officers during the fall sessions, but when there was some doubt last spring as to whether a meeting would be held in autumn the election took place at the Wausau meeting. By way of making this election official, the convention at Green Bay instructed the secretary to cast a unanimous ballot for the entire staff now holding office.

The list of officers, therefore, consists of the following: president—Roy H. Kelly, Marathon Paper Mills Co., Rothschild, Wis.; first vice-president—Vance P. Edwardes, United States Forest Products Laboratory, Madison, Wis.; second vice-president—E. P. Gleason, Nekoosa-Edwards Paper Co., Port Edwards, Wis.; third vice-president—D. B. Davies, Hoberg Paper and Fibre Co., Green Bay; secretary and treasurer —H. A. Skinner, Marathon Paper Mills Company, Rothschild.

Morning Devoted to Mill Visits

As the visitors arrived Saturday morning they were conveyed to some of the paper manufacturing plants of Green Bay. The mills visited were the Fort Howard Company, the Northern Paper Mills, and the Hoberg Paper and Fibre Company Mills. Every courtesy was shown the Northwestern superintendents on their tours of inspection. Questions were freely asked and candidly answered. Later in the day the superintendents in their business session expressed their thanks for the reception. At the Hoberg company plant the visitors were shown the extensive improvements being made there, special note being taken of the drying system recently installed and which was touched upon in one of the papers read at the business meeting.

Temperature in Sulphite Pulping Process

In the afternoon session, held in the Crystal Ball Room of the Northland Hotel, and presided over by President Kelly, the first paper to be read was one prepared by W. H. Swanson, associate chemist of the Forest Products Laboratory, of Madison. Mr. Swanson was at the last minute detained at Madison and therefore unable to read the paper himself. This was done by John D. Rue, also of the laboratory, the subject being "The Role of Temperature in the Sulphite Pulping Process."

The importance of properly selected temperature schedules was emphasized in this paper. It was stated, in fact, that this is more essential than any single factor in the manufacture of high yield of strong sulphite pulp, whether bleached or unbleached.

What the chemist termed "the critical temperature" must be reached before pulping action can proceed at a noticeable rate, it was pointed out. For spruce, the critical temperature was set at approximately 110 degrees Centigrade, and for hemlock it was placed in the neighborhood of 120 degrees Centigrade. This means a division of the schedule into two parts; that below the critical temperature being the preliminary heating period; that above—the pulping period.

"During the preliminary heating period, the cooking acid must penetrate the wood and establish intimate contact for the production of pulp of a uniform quality with minimum screenings. The period should be as short as consistent with uniform penetration. The experience in spruce has been as short as one hour if the chips average ⅝ inches in length. In hemlock, the process is slower but it should not be less than two hours and preferably two and a half to three hours.

"In the pulping period; that is, while the temperature is above the critical value, the manner in which the maximum temperature is obtained is of greatest importance. The temperature rise is accompanied not only by an increase in the rate of pulping but under limitation of pressure used in commercial installations by a loss of sulphuric acid from the digester.

"In producing pulp from spruce for newsprint purposes, the practice is to cook in as short a time as possible, the idea being the more often the digesters are turned over, the greater will be the production and the lower the overhead."

Following the reading of this paper, Mr. Rue conducted an open forum discussion in which a good many of the superintendents participated. About fifteen or twenty different questions bearing on the difference in moisture, the difference in the localities from which pulpwood is gathered, the relative difference between spruce and hemlock, the age of storage of pulpwood, experiments on packing of chips, were asked by the visitors and answered by Mr. Rue.

Incidentally Mr. Rue was asked about new developments in the experimental paper mill at the Forest Products Laboratory, with specific reference to new materials from which paper can be made. The speaker stated that science still is concerned over the value of flax, cornstalks and similar material, and he gave it as his opinion that this class of material will be utilized more and more as the years roll by and as the forests become more and more depleted, but that nothing will ever so well take the place of wood pulp.

Drying of Paper

The next speaker on the program was Rutcher H. Skagerberg, whose subject was "Drying of Paper." He illustrated his talk with a large number of charts to show the relative differences between the drying systems without a hood, with a V-shaped hood, and with the Sirocco system, produced by the firm which he represented. In indicating the variations in temperature, the speaker pointed out that at a pressure of ten pounds the temperature would hover at 240 degrees; at 20 pounds, 260 degrees; at 30 pounds, 275 degrees, and at 50 pounds, 298 degrees. Other charts illustrated the accumulation of vapor under the felts between the dryers and so forth. The advantages of a V-shaped hood system over a drying system without a hood were pointed out. Under the old system, the average temperature at the roof is about 175 degrees. This, he said, can be reduced by as much as 90 degrees. There is no need of heating the roof in order to keep the moisture out as long as it is possible to keep the vapor from coming in, the speaker declared. The system he was introducing eliminates the necessity of a complicated roof duct system and thus avoids deterioration of the roof. The equipment consists of a hollow hood completely covering the dryer section of the machine and the structure adjoining the hood and enclosing the gear side of the machine, together with blowers, indirect heaters, exhaust duct connected to exhaust fans. The entire result is a checking of heat loss and increase in production. He declared that the cost of drying and ventilating can be reduced from four dollars to approximately a dollar and a half per ton.

The Rod Mill as a Refiner and Beater

Mr. Rue now appeared again on the program, this time to deliver an address of his own, on the subject of "Rod Mills." He discussed the value of a rod mill as a refiner and as a beater. He told of four years of experimenting conducted at the Forest Products Laboratory with a rod mill and with one recently put into production at two mills. He brought with him a vast display of samples, ranging from the damp chips to the finished product in kraft and board paper. He main-

tained that a great saving in operation and maintenance can be realized through this system.

Very good results were obtained through these experiments from such material as chestnut and gumwood chips. In the refining experiments the laboratory found that the rod mill, which consists of a rotating cylinder containing a number of loose steel rods two to three inches in diameter, must not be operated too fast, as the rods will drop upon each other instead of rolling about. He said that a rubbing or gentle pounding action is required, and this is obtained at a lower rate of revolution. Mr. Rue also said that the size and weight of rods must be adjusted according to the toughness of the material.

Quicker results with less power are the advantages claimed for the rod mill over the present beater process, he pointed out, and these are expected to be of great value where special strength is required in the paper. It achieves the same results in a half hour that the older type machines require from six to twelve times that long to attain. In the discussion that followed it was brought out that a rod mill is now under construction at the Green Bay Foundry and Machine Works for the Northern Paper Mills, of Green Bay, and that its installation will start soon.

The chemist was asked whether it was advisable to use stainless steel rods for the prevention of tarnish, and Mr. Rue stated that one of the mills used in the experiments contained stainless steel rods, but that no injurious effects were noted in the other. The rod mill is not being marketed generally, he said. The mill used by the laboratory was made by the Allis-Chalmers Company. Some of the experiments were made with the co-operation of Wisconsin paper mills.

National Association Greetings

The greetings of the national association were conveyed to the convention by a letter from President Fred J. Rooney, and brought in person by R. L. Eminger, of Miamisburg, Ohio, national secretary. He complimented the Northwestern Superintendents on their large attendance and their excellent program. He told of some of the aims and accomplishments of the national association, and urged the members to co-operate with Mr. John A. Bowers, of the Hammermill Paper Company, who recently was appointed chairman of the Committee on Chemical and Mechanical Pulp Mill Superintendents. He said that a survey had been made with a view to classifying the members of the association. The survey revealed that there are 442 chemical and mechanical pulp mills in the United States and Canada but that only a small percentage of representatives of these mills are enrolled in the association. At least there is on the records no indication of a greater number. Practically all of the members are unclassified. Under this arrangement the officers of the association are working at a handicap, he declared. When a member writes for information on a certain subject and neglects to state whether he is a paper mill superintendent or a pulp mill superintendent, it is sometimes difficult to refer him to the proper authority, as the officers do not know from what viewpoint the inquirer wants his information. He may thus perhaps be referred to a person who may know less of a subject in hand than the inquirer himself. An index of the paper mill superintendents and of superintendents of sulphate, sulphite, soda, and ground wood pulp mills would eliminate this trouble.

Mr. Eminger urged the members present to plan now on attending the next national convention which will be held either the last week of May or the first week in June at Richmond, Va. He said that the South is rapidly becoming a real center of paper manufacturing and that it would be of great interest to the northern superintendents to see what is being done in this field down south. There are in Richmond alone ten paper mills with six or eight more in the vicinity. Gumwood forests prevail in this territory.

The division secretary, A. H. Skinner, reported at the convention that the division now consists of 88 members in good standing. Offsetting a loss of 16 members who were dropped at the beginning of the year are 21 new members enrolled since that time. The members hail from the Wisconsin and Fox River Valleys in Wisconsin, and from Minnesota and Upper Michigan.

The session following the banquet at 6:30 was not of a technical nature but was devoted to entertainment. A very enlightening address was delivered by James H. McGillan, Green Bay, on the "United States Navy." Mr. McGillan, a former judge, is lieutenant-commander of the U. S. Naval Reserve Forces and in charge of the naval unit at Green Bay. The Green Bay High Schools band, appearing for the first time in public, gave a concert for the superintendents at the banquet. Many of the superintendents at the convention were accompanied by their wives.

In Attendance

Among those in attendance were: F. C. Boyce and Roy Selliers, Wausau Paper Mills, Wausau, Wis.; J. H. Slater and William Haddock, Escanaba Paper Co., Escanaba, Mich.; R. A. North, Green Bay Foundry & Machine Co., Green Bay, Wis.; R. H. Kelly, Marathon Paper Mills Co., Rothschild, Wis.; A. H. Skinner, Marathon Paper Mills Co., Rothschild, Wis.; D. B. Davies, Hoberg Paper & Fibre Co., Green Bay, Wis.; W. A. Kelly, Northern Paper Mills, Green Bay, Wis.; A. Umberham and P. D. Bradley, Fort Howard Paper Co., Green Bay, Wis.; Charles Dupries, Great Western Paper Co., Ladysmith, Wis.; J. G. Shakmen, Foote Bros. Gear & Machine Co., Chicago; Ralph L. Eminger, American Pulp & Paper Ass'n, Miamisburg, Ohio; W. G. Guidotte, Levins-Guidotte, Neenah, Wis.; E. O'Brien, Dells Pulp & Paper Co., Eau Claire, Wis.; E. P. Gleason, Nekoosa-Edwards Paper Co., Port Edwards, Wis.; J. D. Rue, Forest Products Laboratory, Madison, Wis.; Jan Haugeroi, Peshtigo Pulp & Paper Co., Peshtigo, Wis.; Allen Abrams, Marathon Paper Mills Co., Rothschild, Wis.; A. G. Stone, Marinette & Menominee Paper Co., Marinette, Wis.; Oscar Staniska, Hoberg Paper & Fiber Co., Green Bay, Wis.; C. F. North, Green Bay Foundry & Machine Co., Green Bay, Wis.; J. C. Burton, Simond Saw & Steel Co., Chicago, W. F. Swan, Limestone Products Co., Menominee, Mich.; L. H. Breyfogle, Draper Bros., Canton, Mass.; George Bonner, Falls Mfg. Co., Oconto Falls, Wis.; L. C. Locklin, Shulern-Benninghofen, Hamilton, Ohio; E. C. Jacobi, Standard Oil Co., Green Bay, Wis.; C. D. Durkee, D. J. Murray Mfg. Co., Wausau, Wis.; John Hercher, John Strange Paper Co., Menasha, Wis.; W. H. Burns, Valley Iron Works, Appleton, Wis.; Edw. McCornock and E. G. Fox, Central Wire Cloth Co., Green Bay, Wis.; M. Cavanaugh, Manhattan Rubber Co., Chicago; George V. Parmentier, Tomahawk Kraft Paper Co., Tomahawk, Wis.; R. D. Terrien, American Writing Paper Co., DePere, Wis.; A. McPhillips, R. J. Dowd Knife Works, Beloit, Wis.; C. E. Stahl, Tomahawk Kraft Paper Co., Tomahawk, Wis.; J. F. Kern, Federal Metals Corporation, Chicago; F. E. Saecker, Appleton Machine Co., Appleton, Wis.; A. L. LeRoux, Riverside Fiber & Paper Co., Appleton, Wis.; T. E. Kellberg, Dry Systems, Inc., Chicago; A. H. Haskins and Commodore Thomas, Hoberg Fibre & Paper Co., Green Bay, Wis.; A. S. Viger, Munising Paper Co., Munising, Mich.; C. W. Cole, Northern Paper Mills, Green Bay, Wis.; Ed. Shield, Hoberg Paper & Fibre Co., Green Bay, Wis.; C. M. Cram, Security Rubber & Belting Co., Chicago; R. H. Cunningham and Gus Klaus, Northern Paper Mills, Green Bay, Wis.; Mike Heigl and F. J. Timmerman, Northern Paper Mills, Green Bay, Wis.; G. J. Chapleau, D. H. Greene and J. P. Zelinski, Wisconsin Tissue Mills, Menasha, Wis.; John J. Nylund, General Dyestuffs Corporation, Chicago; James Foxgrover, Western Paper Manufacturing Chemical Co., Kalamazoo, Mich., C. M. Holt, Pennsylvania Salt Mfg. Co., Philadelphia; George Thomske and H. Daven, Nekoosa-Edwards Paper Co., Nekoosa and Port Edwards, Wis.; R. Skegerberg, Drying Systems, Inc., Chicago; R. J. Siebert, Marinette & Menominee Paper Co., Marinette, Wis.; A. J. Winnige and H. J. Swanson, Great Western Paper Co., Ladysmith, Wis.; Frank Cota and Anton Gustin, Falls Mfg. Co., Oconto Falls, Wis.; R. J. Kummer, Tomahawk Pulp & Paper Co., Tomahawk, Wis.; J. M. Radsch, Thilmany Pulp & Paper Co., Kaukauna, Wis.; R. J. Lammoreux and J. B. Ziemann, Marinette & Menominee Paper Co., Marinette, Wis.; H. B. Clurman, Green Bay Barker Co., Green Bay, Wis.; John Sobota, Fort Howard Paper Co., Green Bay, Wis.; Harry Jacqmin, A. E. Cofrin and Gus Gilsaul, Fort Howard Paper Co., Green Bay, Wis.; H. A. Morrison, Oliver Filter Co., New York City; M. J. Ketter, V. Larschot and H. D. Banta, Hoberg Paper & Fibre Co., Green Bay, Wis.; A. W. Burton, Northern Paper Mills, Green Bay, Wis.; P. A. Smith, Combined Locks Paper Co., Combined Locks, Wis.

How Cost of Insurance Premiums May Be Lowered*

By REED B. TIMMERS

INSURANCE, in all industries, and especially paper, it seems, is a sort of a football which everybody from the president down to the office boy tries to kick to the other fellow. Cost accountants have not paid sufficient attention to this part of overhead or there would not be differences amounting to many thousands of dollars per year between the insurance costs of competitors. It should be regarded not as the fixed expense of a necessary evil but as something which is very widely variable according to the efficiency with which it is handled. The true work of the cost accountant is not just to tabulate results but to show where his company is behind his competitor. Judging by my own experience and by present paper mill insurance rates, about forty-nine out of fifty cost accountants have slipped up on this.

Paper Mills Pay Highest Premiums

The average paper manufacturer is more interested in compensation insurance today than any other form, and has reason to be. The statistics covering that part of the country in which the paper industry is largely located show that the number of accidents and the amount of compensation paid per thousand employees in paper mills is higher than in any other manufacturing industry. It should be one of the lowest. The redeeming feature which makes it of real interest is that, while the rates are very high as a result of these heavy losses, the cost can be very greatly lowered through the actual experience of the plant itself. The importance of reducing these rates is shown by contrast between two mills with which I am acquainted. Both are manufacturing the same finished product and naturally have almost the same type of machinery and other hazards necessary to the business. Each has about 800 employees and neither is self-insuring. The difference between compensation premiums for this year, however, is approximately $38,000. It is not to be wondered at that the one paying the higher premium suddenly dug into the compensation problem when he realized what he was up against in trying to meet his competitors' prices. The reason for the difference lies almost entirely in the past experience of the manufacturers.

Reduce Amount Paid in Claims

The principal way to cut the cost of compensation insurance is to reduce the amount paid out in claims by your insurance company. I will briefly sketch the manner of premium computation in order to bring this out. In very nearly all states, while the actual figures will vary, the procedure is along the same line. First, you take the manual rate for the industry in the state in which it is located. Then that is varied slightly upward or downward, seldom more than a total of 5 per cent in either direction, according to the rating board inspection of the guarding of the mill. This variation does not occur in all states and is not of major importance in those where it is found because the variation is so small. This new rate then is varied according to the experience of the manufacturer himself. The figures which cause this variation are the actual compensation and medical payments of the insurance company. The effect which the experience has on the final rate is determined largely by the size of the paper company. In other words, a very small manufacturer with a record of no payments made whatever on compensation might receive a total reduction of about 20 per cent, though a large manufacturer with the same record might receive a total reduction of 80 per cent. In striking an average over nearly all states where paper is manufactured it would be safe to say that in a plant employing 300 men, the fixed part of the premium would be about 45 percent, and the part varied according to experience will amount to about 55 per cent. It therefore behooves every manufacturer who wants to keep up with his competitors to keep the actual losses paid by the insurance company down to a minimum.

I would say here that small losses are every bit as important as big ones, because in computing the expedience portion of the premium, the first thousand dollars of any single accident which is paid out by the insurance company to the claimant will be repaid to the insurance company, in premiums, at an average rate of about 160 per cent. On the amount in excess of $1,000, on any single accident, the manufacturer will only pay to the insurance company anywhere from 10 per cent to 50 per cent of the amounts paid out.

Methods of Reducing Losses

From now on I am going to stick to the various methods used successfully to reduce actual losses. I would say that the methods which I will mention are not merely my own opinion, but are the methods which have been thoroughly proven over a period of years by some of the largest manufacturers in the country. If Dodge Brothers, Bethlehem Steel Company, General Motors Company, and various other concerns like these have lost their minds in this respect, I hope to be insane in the same way, and that it will result profitably for me, as it has for them. That these methods work in paper mills has also been thoroughly proved.

Careful guarding of dangerous parts of machines partially solves the problem, but on the average will not bring about an actual reduction of losses amounting to much over 20 per cent. The remaining 80 per cent reduction in losses can only be brought about by the manufacturer himself. The insurance company inspectors do not touch on this last 80 per cent at all because too small a proportion of their risks are large enough to make it profitable to them to carry loss reduction much further than guarding.

Keep Track of Injured Employees

Just a week ago I was in the plant of a manufacturer whose mill is well over a hundred miles from the claim office of his insurance company, which naturally makes it hard for the company to keep close track of injured employees. While I was there, the doctor who takes care of practically every injury which happens at the mill, telephoned the manufacturer that one of his employees, who had been injured in July, had apparently recovered from the injury itself, but had a slight amount of rheumatism in his arm, and was going to take three or four weeks off to go fishing until he was totally recovered. The fact of the case was, that even the rheumatism was not enough to prevent the man's doing his regular work, but of course a doctor cannot prove that a man has no pain in his arm. The employee said that, if the manufacturer was paying for it himself, he would probably come back on the job and manage to get along in some way, but as long as the insurance company was paying for it, he might as well take a vacation. About all that was said by the chap in the manufacturer's office who keeps track of their compensation cases, was that it was too bad that something could not be done about it. And the employee started undisturbed on his vacation. These additional losses caused by the stretching out of an accident into twice as much compensation as should be paid form a good-sized part of total losses paid by the insurance companies. The way to hold this type of loss to the minimum was discovered long ago and is used by some manufacturers. When a man is sufficiently recovered to be able to do some light work, he should be brought back to the mill and put on a light job at reduced wages, which results in the amount of compensation per week being also reduced. He will not remain on reduced wages any longer than necessary, since, as long as he has to be at the mill in any case for eight hours a day, he will get back on his regular job as soon as possible in order to obtain full pay. By this I do not mean that an employee should start work as soon as he has been bandaged up if he has a severe injury, but that he should be at the mill doing partial work as soon as he is well on the road toward recovery. Another advantage of using this procedure is that it allows the mill to keep a very close eye on him so that he will not be doing work at home which will tend to aggravate his condition, and also that he will be sure to be present when his injury needs treatment.

Infected Injuries

Infections are another bugaboo to the experience loss record. Statistics of most of the states in which paper manufacturing is done show that infections enter into about 10 per cent of the cases on which compensation is paid. This can be

*Read before the Cost Association of the Paper Industry at Holyoke, Mass., September 23, 1926.

reduced to 2 per cent or less, as is clearly shown by the fact that many have already accomplished it. Some of the costliest cases are those in which a minor injury is not treated until an infection starts in, and then it is sometimes too late to stop it before the loss runs up into hundreds of thousands of dollars. Many manufacturers have found it necessary to make an inflexible rule that all injuries of any nature, and no matter how slight, must be reported to the medical or first aid department, and treated, and that the employee must appear daily at the medical department until the one in charge of it pronounces the case cured. In some mills, the men will follow this rule voluntarily, appreciating that it is to their advantage; in other mills it has been necessary to make discharge the penalty of disobedience, and also the penalty of any foreman who knowingly allows a violation of the rule. The average reduction of infection cases in plants which install this rule and then enforce it is probably at least 80 per cent, and in one mill with which I am well acquainted the infection cases have been reduced from an average about 20 per year to one. With the present average cost of infections at about $300 each, this saving really meant something. I recently ran across another cause of costly infection cases. The doctors in the village where the plant is located always believe in taking care of their own cases to the finish. These doctors would never send a severe case to the hospital, although it was impossible to have the employee receive proper treatment at home. Two cases which aroused my particular interest were streptococcus infections, which are probably the meanest type to handle, and in these two cases the losses had resulted, one in 90 per cent loss of use of an arm and the other in 100 per cent loss of use of a hand, and which cost this manufacturer a total of about $8,000, through his experience rating. The best surgeon in the country would not have tried to treat cases like these at home, but would have sent the employee to the hospital immediately for hot packs every fifteen minutes. The treatment in both of these cases had consisted in having the employee come to the doctor's office once a day as long as he was able to walk, and after that the doctor called at the employee's house once a day. To be sure of the facts, I reviewed the insurance company's file on these two cases with an industrial surgeon and it showed that when the infections first became evident they would probably have been stopped by two days of constant hospital treatment. This industrial surgeon, who is one of the best, stated that with the treatment which they had received, the only wonder to him was that either of the men were alive. During the past two years the manufacturer has greatly reduced the amount paid on infection cases by insisting that the doctors send all infection cases to the hospital under a competent surgeon immediately upon an infection showing up.

Aggravation Cases

Another cause of high compensation cost is the occasional injection into the experience record of what is known as an "aggravation" case. By this I mean a case in which the employee has some disease such as diabetes, tuberculosis, Bright's disease, or various others, and then receives an injury which is held to have aggravated or lightened up the condition, and then the manufacturer often pays several thousand dollars in premiums unnecessarily. It is now held in almost every state that almost any injury can aggravate almost any disease. While there are no official statistics available to show the exact amount of compensation paid in any state on cases which a previous condition has entered into, I have followed this up very closely myself, through a large number of mills, and the results have shown enough to make one "stop, look and listen." There is only one way known to keep these kinds of cases from entering into the experience, and that is to prevent them long before they occur. Every employee should be thoroughly examined physically once every two or three years, and every applicant for work should be examined before being employed. The report of the examination should then be passed upon by someone in the mill who knows something about Workman's Compensation. This man should decide whether or not the applicant or employee is fitted to do the work for which he is scheduled. If there is a great hazard in allowing him to do the work planned for him, he should by all means be transferred to another job. If the examination shows some curable disease, it should be insisted upon that he avail himself of treatment and effect either a complete or at least a partial recovery. It is not good policy to refuse to employ a man or to discharge an employee because of a physical deficiency and the employee should be informed that this will not occur. Some employers state that their employees would not stand for a physical examination and that they would have all kinds of trouble on their hands. This can be handled diplomatically, however, as it can be shown that the benefit is largely to the employee as he can not afford to lose his life half as well as the manufacturer can afford to lose a few thousand dollars. The conditions which have to be watched for especially are tuberculosis, Bright's disease, diabetes, syphilis, anemia, organic heart conditions, varicose veins and a multitude of others not so common as those named. My own figures covering plants employing about 50,000 men in New York State show that the cost of examination is about 12½ per cent of the amount which would be paid on aggravation cases if the men were not examined physically.

There are, of course, many other things which enter into making up a poor experience record which can be discovered by looking over the mill itself and reviewing the accidents for a period of several years. In some instances it will be found that unsafe plant conditions, such as defective floors, lack of guarding, congested machinery or a general disregard of safety throughout the plant are responsible for high losses, but any of these factors can be overcome.

But the fact remains that some plants have reduced the time lost by their employees on account of accidents to less than half a day a year per employee, and if some plants can do it, there is no reason why others cannot. It is simply a case of finding out what is wrong and then correcting it, and the results are bound to follow.

Control of Compensation Rate

Another matter of importance to every manufacturer which is sadly neglected, is the auditing of all features which enter into the determination of the compensation rate paid. It is very easy for an insurance company to make a mistake on the payroll or especially the experience submitted to the rating board. The fact that my entire fee for a complete audit and inspection of a manufacturer's insurance situation is more than paid for in about three cases out of five by the refund obtained by the insurance company on account of errors in rating, is surely proof enough of the need of such an audit.

Lapsed or Invalid Policies

Another thing which I wish to take up at this time, is something which I hate to find when at various plants but do find very regularly. That is, policies which are totally or partially void. My own experience has shown that just about half of the various paper mills have one or more of these policies. Almost every one does the same as I used to do in regard to their insurance policies, and that is to look over the rate and the total premium, pay it, and put the policy in the safe. A warning to read the policy is put on almost every one sent out, but very few heed it. The result is that a large number of policies, while they look nice, are no good if one has to collect on them. There are about fifteen various things warranted by the assured which are enumerated in the body of the usual fire policy, any one of which may be changed by endorsement, if the conditions of the assured's plant require it. For instance, the body of practically every fire policy states that unless the land on which the plant stands is owned in fee simple by the assured, the policy is void. In case part of the assured's plant stands on leased land, all he has to do is to have an endorsement added, stating that to be a fact. The absence of this endorsement, however, in case of a large loss can cause the assured to stand his own loss and not collect a nickel. These warranties should be carefully read by every assured to be certain that there are no violations.

Policies covering boilers and digesters against explosion contain a warranty as to the maximum pressure under which they will be operated. Policies covering engines and machinery contain a warranty as to the maximum number of revolutions per minute. Ordinarily all that is necessary in case the policy and the objects covered do not correspond is to have the policy amended to meet the requirements and, if it is reasonable, the

companies will not object. It is a rather serious matter, however, to have a large loss when the policy is being violated. My own experience would indicate that policies covering about 5 per cent of the boilers, about 25 per cent of the digesters and about 55 per cent of the engines in paper mills are unenforceable in case of loss on this account.

A Semi-Chemical Pulping Process

By JOHN D. RUE[1], SIDNEY D. WELLS[2], FRANCIS G. RAWLING[3], and JOSEPH A. STAIDL[4]

DURING the last five years the Forest Products Laboratory has made a careful study of the chemistry of the processes used for pulping wood and of the hydrolytic reactions incident to the decomposition of wood.[5] Out of the study there has been developed a semi-chemical process by which the wood fibers are isolated in yields in excess of 70 per cent and in quality suitable for certain grades of board on the one hand, and for low and medium grades of print papers on the other.

The process consists essentially in: (1) a pressure impregnation of the chips with the cooking liquor; (2) a mild digestion of chips with chemicals which are practically neutral and which are capable of maintaining neutrality during the liberation from the wood of considerable quantities of organic acids, followed by (3) a mechanical reduction of the softened chips to pulp. Neutrality of cooking chemicals is desirable in that it prevents too drastic hydrolytic attack upon the wood constituents and yet admits of sufficient action to weaken the forces binding the fibres together. Pressure impregnation insures uniform distribution of the chemicals throughout the wood prior to digestion. Digestion is effected at temperatures and for periods of time adequate for the softening but not for the complete pulping of the chips. The softened chips are reduced to pulp by mechanical means, as by passage through a rod mill.

The idea of a semi-chemical method of pulping—i. e. a mild chemical treatment followed by mechanical disintegration—is not new. The literature abounds with suggestions of this character[6], but, except as applied in the manufacture of steamed groundwood, none has come to important practical fruition. The reason probably lies in the failure hitherto to combine in one process the elements essential to the manufacture of a product of low cost, high yield, fair strength, and a reasonable approach to a white color.

The Process in Detail

Chemicals.—In the Forest Products Laboratory process, sodium sulphite forms a natural nucleus for the group of chemicals selected by reason of its ready solubility, its neutrality, its reducing properties, and the solubility of such compounds as are formed by its reaction with wood. Sodium bicarbonate is used with the sodium sulphite to maintain approximate neutrality of the reaction throughout the digestion. The organic acids are neutralized with the liberation of carbon dioxide, which can be withdrawn as the digestion proceeds.

The proportion of the reagents to each other and to the wood is determined by the species and condition of the wood and by the quality of the product desired. The total quantity of chemicals need not exceed 15 pounds for each 100 pounds of wood. The quantity of bicarbonate must be sufficient at least to neutralize the organic acids produced. The bicarbonate may be replaced or supplemented by sodium carbonate or even by sodium hydroxide, provided the darker color of the pulp is not objectionable and provided also that modified properties of the product are desirable.

The cooking liquor may be prepared by absorbing sulphur dioxide in a solution of soda ash. The carbon dioxide liberated will be sufficient to convert the desired proportion of soda ash to bicarbonate.

The semi-chemical process is not necessarily limited to the particular chemicals enumerated above. Further research will doubtless reveal other reagents and combinations of them which will effect the necessary softening preliminary to mechanical disintegration with equal or greater satisfaction. Studies with this end in view will be undertaken by the Forest Products Laboratory as rapidly as time and facilities permit.

Preparation of the Wood.—For pulp of the best quality and highest color the wood is barked, cleaned, and chipped as for the sulphite process. For pulp of lower grade such as is to be used in boards the wood may be chipped in a "hog" and, for some purposes, even without removal of the bark.

Impregnation of the Chips.—The chips are charged into a digester—preferably a globe rotary—and steamed for at least half an hour at atmospheric pressure, and the digester is then filled with liquor which is forced into the chips under a pressure of about 100 pounds per square inch. By a proper selection of the concentration of the liquor and the temperature of impregnation, the requisite quantity of each chemical will be absorbed by the chips. At the end of the impregnation period, which may require approximately one hour, the liquor not absorbed by the chips is returned to the storage tank to be fortified for use in a subsequent cook.

It is preferable to complete the impregnation at a temperature of 120°C. to 125°C. Most of the organic acids may be set free at temperatures between 110°C. and 130°C., and it is advantageous to induce their liberation while the digester is completely filled with solution. This procedure removes the danger of free acid vapors corroding the digester walls. Impregnation at 120°C. to 125°C. should be continued until the removal of the organic acids has been completed, which may require one to one and one-half hours.

Digestion of the Chips.—After the return of the excess impregnating liquor, the digester contents are brought quickly to a temperature between 140° C. and 160° C. and held there for a period varying from one to six hours. The higher the temperature and the longer it is maintained the more thoroughly will the chips be softened and the lower will be the yield. The character of the product will also be determined in some degree by these factors.

Rotation of the digester or else circulation of the liquor through an external pump is essential to uniform digestion.

The digested chips are dumped, and after being washed are ready to be fed to the rod mill.

Reducing the Softened Chips to Pulp.—The softened chips, which represent from 70 per cent to 85 per cent by weight of the wood, still retain a large part of their mechanical rigidity. The forces binding the fibres together have, however, been sufficiently weakened to permit the fibres to be rubbed or pounded apart without excessive injury to their structure. The separation of the fibres is advantageously accomplished by passing the softened chips through a rod mill such as is used in the mining industry. The operation is continuous. A detailed discussion of the application of this apparatus to pulp and paper operations is given in another paper[7]. Sufficient water is fed with the chips to form a pulp suspension of between four and eight per cent. The pulp as it leaves the rod mill is not unlike a chemical pulp and can be washed, screened, and handled accordingly. The screenings are reground with subsequent charges of chips.

Application of the Process to the Manufacture of Low and Medium Grade Print Papers

For the manufacture of white papers by the semi-chemical process, the wood must be light in color and relatively free from knots and other defects, and must be thoroughly barked and cleaned.

The coniferous species yield readily to the treatment, but the pulp does not possess strength and flexibility commensurate with the length of the fibres. It is believed that no economic or technical advantage would result from the use of semi-chemical coniferous pulps in the manufacture of print papers.

Semi-chemical pulps from deciduous woods, however, possess strength and flexibility far in excess of the pulps prepared

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[5] Rue, J. D., Studies in the Hydrolysis of Wood for Pulp. Presented at the Regional Meeting of the American Chemical Society, Madison, Wis., May 28-29, 1926.
[6] See Rue, J. D., Semi-Cellulose and Semi-Chemical Pulping; A Review of Publications Relating to the Subject. Paper Trade Journal, Oct. 15, 1925.
[7] Rue, J. D., and Wells, S. D., The Rod Mill in the Pulp and Paper Industry. Presented at the Meeting of the Technical Association of the Pulp and Paper Industry, York, Pa., Sept. 14-16, 1926.

from the same woods by the soda process. Paper of the weight and caliper of newsprint made wholly from semi-chemical pulp of black, tupelo, or red gum or aspen, birch or maple, possesses greater strength than the present commercial newsprint. In the case of the gums, provided black and red heartwood have been excluded, the color of the paper can be made by the use of black, tupelo, or red gum, or aspen, birch or maple, possesses of dyes to equal or excel that of standard newsprint. With the addition of clay a very excellent catalog paper can be produced.

Semi-chemical pulp from aspen and birch, and possibly maple, can be substituted to the extent of over 50 per cent in the standard newsprint furnish of groundwood and sulphite without sacrifice of quality. In fact, combinations of groundwood and semi-chemical pulp can be used without sulphite. The sheet which contains no sulphite possesses ample strength when dry, but when wet it is rather weak and requires special care in handling on the wet end of a paper machine.

Laboratory Tests.—In the semi-commercial tests made at the Forest Products Laboratory wood was cooked in either 100-pound or 500-pound digesters and the softened chips ground in a rod mill three feet in diameter and five feet long, inside measure. The data for several typical cooking and paper strength tests made with three species of gum and with aspen, birch, and maple appear in Table 1.

TABLE 1—Cooking Data for Hardwood Designed for Print Papers, and Strength of Papers Made

	Cooking Data								Strength of Machine Made Paper				
Cook No.	Maximum temperature of impregnation Degrees centigrade	Chemical Used Per 100 pounds oven-dry wood Na_2SO_3, pounds	$NaHCO_3$ calculated as Na_2CO_3, pounds	Maximum cooking temperature Degrees centigrade	Time to maximum temperature after impregnation, hours	Time at maximum temperature, hours	Digester gauge pressure Pounds per sq. in.	Yield oven-dry basis, per cent	Weight per ream 24x36x500, pounds	Bursting strength (Mullen), points	Strength factor (a)	Folding endurance Number double folds	Weight per ream divided by ten thousandths of an inch thickness
Aspen—													
2175	129	9.8	4.9	140	0.4	2.0	50 to 60	83b	38.0	21.7	0.57	104	1.00
2176	127	11.3	4.7	160	0.4	2.0	82 to 107	74	51.0	30.4	0.60	305	1.28
2182	125	15.1	5.8	156	0.3	3.0	75	..	37.0c	21.0c	0.57c	38c	1.12c
Black Gum—													
2055	100	6.5	.....	160	2.0	2.0	.....	70d	...	...	...	...	...
2057	100	8.0	1.6 $NaHSO_3$	160	2.0	0.0	.....	86	...	...	...	...	...
2082	100	10.4	2.3	160	2.1	2.0	81 to 96	79	40.5e	11.3e	0.28e	4e	1.27e
2181-N	128	9.0	3.6	160	0.3	3.0	70 to 90	..	45.5	17.8	0.39	15	.84
White Birch—													
2177-N	125	7.3	3.2	140	0.5	2.0	51 to 60	80	51.0	47.5	0.93	115	1.13
2178	125	8.1	4.9	160	0.6	2.0	85 to 98	81	43.5	38.2	0.88	253	1.21
2183-N	126	6.1	4.0	158	0.3	3.0	79 to 86	..	36.0	24.8	0.69	161	1.13
Maple—													
2179	128	9.1	4.4	145	0.3	2.0	55 to 65	85	75.0	34.6	0.46	13	0.85
2184	126	11.1	4.6	160	0.5	2.0	90 to 110	80	...	...	...	...	...

a Bursting strength divided by weight per ream.
b Pulp rather shivey.
c Paper contains 25 per cent groundwood.
d Chips burned.
e Beater furnish contained 20 pounds mineral filler and 6 pounds alum per 100 pounds fiber.

Commercial Demonstration.—Fifteen cords of black gum were chipped and shipped to a commercial plant specially equipped to carry on the semi-chemical process. The wood was cooked in a 14-foot globe rotary, and the softened chips were ground in a rod mill six feet in diameter by twelve feet in length.

In a typical cook 14.2 pounds of sodium sulphite and 2.4 pounds of sodium bicarbonate (calculated as sodium carbonate) were used for each 100 pounds of wood. The chips after impregnation were cooked for four hours at a temperature ranging between 155° and 160°C. The chips were milled at the rate of 9.3 tons per 24 hours with a power consumption of 90 horsepower, or at the rate of 9.7 horsepower-days per ton. The pulp was partially dried on a board machine, and the rolls were shipped to a paper mill. The yield was approximately 75 per cent, oven-dry.

At the paper mill, portions of the pulp were beaten and without the addition of other fibre were made into paper on a "Yankee" machine at the rate of 90 feet per minute. The strength of the sheet is indicated by the following data for sheet No. 5A:

Weight per ream, 24x36x500.....48.1 pounds
Caliper .....0.0042 inch
Mullen test 24.5
Points per pound per ream.....0.51
Breaking length.....4510 meters
Stretch .....1.14 per cent
Tear .....40.0 grams
Double folds 18

Estimated Cost of One Ton of Pulp.—The cost can be estimated with accuracy only for a given locality and with due regard to local unit costs. It is believed, however, that the values arbitrarily selected for illustration here are not far from the average and that the total cost is representative.

The following estimate is based upon a plant capacity of 100 tons daily production:

Wood.—0.954 cords of gum, birch, or maple, peeled, at $10 per cord.....$ 9.54
It is estimated that
1 cord=3,000 pounds oven-dry wood
2,100 pounds oven-dry pulp,
the oven-dry yield being taken as 70 per cent.

Soda Ash.—358 pounds at $1.50 per 100 pounds..... 5.37

Sulphur.—72 pounds at $1.00 per 100 pounds..... .72
(Chemical consumption based upon use of maximum quantities, viz., 4 pounds sodium bicarbonate, calculated as carbonate, and 10 pounds sodium sulphite.)

Power—Rod mill, 12 horsepower-days; chipping and miscellaneous, 3 horsepower-days; total, 15 horsepower-days at 24c..... 3.60

Steam—2,000 pounds at 50 cents per 1,000 pounds..... 1.00

Labor—0.4 man-day per ton, at $4.00 per man-day..... 1.60

Maintenance 1.00

Overhead.—15.7 per cent (basis, $8,000 per ton daily capacity or $26.67 per ton annual capacity).. 4.19

Total cost of one ton slush pulp.....$27.02

When a wood of relatively low density, such as aspen, is used, consideration must be given to an increase in the number of cords required and to a corresponding increase in the cost of wood.

Hardwoods Economically Desirable for Print Papers.—The economic desirability of using the broadleaf species of wood (the hardwoods) in the manufacture of low and medium grade print papers needs little emphasis. The readily available supply of spruce, hemlock, and fir, which at present constitute almost the sole raw material for these grades of paper, is rapidly waning. Even if the cut-over forests containing these species were reproduced on a large scale, they would not reach

useable size until after the exhaustion of the accessible supply. The broadleaf species, however, especially aspen, birch, and the gums are not only at present available in very considerable quantities and in localities favorably situated with respect to the markets but give promise of abundant and rapid reproduction, thus insuring a continuing supply.

The introduction of semi-chemical pulp from aspen and birch, and possibly from maple, should therefore assist in supplementing the diminishing supply of pulpwood available to the print paper mills in the states in the North and in the Northeast. The supply of gum wood in the Southern states offers an excellent opportunity for the development of a print paper industry in a region which has hitherto been excluded from serious consideration for the purpose, because of the lack of spruce and hemlock for groundwood and for sulphite pulp.

Application in the Manufacture of Boards

In the manufacture of semi-chemical pulp for use in boards the selection and preparation of the wood does not demand the care demanded in the manufacture of print papers. As in the case of the latter, however, semi-chemical pulps from the broadleaf woods are preferable to those from coniferous species for reasons already stated. Mill and logging waste can be used where it is economical to do so. "Hogging" may replace chipping. Inasmuch as a light colored product is not a prime essential, such dark colored woods as chestnut, oak, elm, and the red heartwood of gum may be used, although light colored woods need not be excluded.

The details of operating the semi-chemical process in the manufacture of pulps for board do not differ essentially from those which apply in the case preceding. It is not necessary, however, to maintain throughout the digestion the degree of neutrality of liquors which is essential to light color in the product. The bicarbonate may in fact be replaced in whole or in part by carbonate or even by caustic soda. Increased alkalinity of the liquor tends, however, in the case of hardwoods, to lower the yield and to make the product softer, more bulky and weaker.

Laboratory tests.—In board tests made at the Forest Products Laboratory, the previously described equipment was used. Chestnut chips from which the tannin had been extracted, cottonwood mill waste, and gum mill waste were reduced to semi-chemical pulp and made into light-weight board on the Laboratory's 15-inch Fourdrinier machine. The cooking data and the strength data for the boards appear in Table 2.

TABLE 2.—Cooking Data for Hardwood Pulps Designed for Boards, and Strength of Paper Made

	Cooking Data							Strength of Machine Made Paper				
Cook No.	Maximum temperature of impregnation Degrees centigrade	Chemical Used Per 100 pounds oven-dry wood Na_2SO_3, pounds	$NaHCO_3$ calculated as Na_2CO_3, pounds	Maximum cooking temperature Degrees centigrade	Time to maximum temperature after impregnation, hours	Time at maximum temperature, hours	Digester gauge pressure Pounds per sq. in.	Yield oven-dry basis, per cent	Weight per ream 24x36x500, pounds	Bursting strength (Mullen)	Strength factor (a)	Weight per ream divided by ten thousandths of an inch thickness
Chestnut—												
2048	100	8.3	...	161	1.8	2.0	83 to 95	81	52.9	27.6	0.52	1.06
2113	110	2.8	4.4	129	0.4	1.0	.....	89	117.0	31.4	0.27	0.90
2112	114	4.4	6.7	133	0.4	2.0	.....	79	125.5	48.3	0.38	1.05
Cottonwood Mill Waste—												
2119	120	11.5	8.4	155	0.5	2.0	45 to 65	..	108.3	92.8	0.86	1.20
Gum Mill Waste—												
2120	122	10.4	4.1	150	0.3	1.5	50 to 54	..	120.8	85.6	0.71	1.01

a Bursting strength divided by weight per ream.

Commercial Manufacture of Chestnut Board

The production of board from extracted chestnut chips by the semi-chemical process has passed into the commercial stage of manufacture. Over 1,000 tons of the new product have been satisfactorily marketed.

The chips are cooked in a 14-foot globe rotary digester with 4 pounds of sodium bicarbonate (calculated as carbonate) and 8 pounds of sodium sulphite at a temperature of 150° to 160° C. The pulp is ground in a rod mill 6 feet in diameter and 12 feet in length rotating 14 r.p.m. The capacity of the mill is about 12 to 15 tons per 24 hours depending upon the degree of hydration desired and less than 90 horsepower is required to operate it. The pulp is passed through a Jordan to the cylinder machine and made into board 0.009 inch thick. The sheet gives a Mullen test of about 0.5 point per pound per ream. It possesses unusual strength, stiffness, and toughness for the short fibers used in its manufacture.

The sheet has been used successfully for corrugating. Boxes made with chestnut corrugated board have been demonstrated by laboratory test and by actual service in transportation to be fully equal to boxes made with straw corrugated board.

Hardwood Mill and Logging Waste for Board

Efforts to find a use for hardwood mill and logging waste in the standard pulping processes have not been successful. The fibers of the hardwood are too short to yield a strong pulp even by the sulphate process and cannot compete with sulphate fiber made from coniferous woods. Soda pulp, which is practically the only kind made from hardwoods at the present time, must be clean and easily bleached. Well cleaned and thoroughly barked round wood is more conducive to cleanliness of pulp than either mill or logging waste. Moreover, a supply of round wood is available for soda mills, adequate to meet their somewhat limited demands. Thus mill and logging wastes have remained a drug on the market so far as standard pulping requirements are concerned.

The quantity of waste from a single mill is as a rule not large. The large installation cost of a modern chemical pulp mill is not conducive to the establishment of small local plants, and, on the other hand the low value of waste material does not warrant extensive handling and carriage costs to get it to large centers. The semi-chemical process, however, through its low cost of installation (about half that of chemical processes), the feasibility of operating it in small units, and the low cost of its product, may prove a valuable aid in converting hardwood waste into valuable board products. To what extent semi-chemical pulp can economically and technically supplement the present ingredients of container and other grades of board has not been fully determined, despite the success already attained with chestnut board; but the possibilities are sufficiently great to warrant further careful investigation.

Estimated Cost of Semi-Chemical Pulp for Boards

The estimate of the cost of pulp for print papers, previously presented, applies to pulp for boards except that there may be some reduction, due chiefly to the lower cost of wood and of its preparation.

Coniferous Woods in the Semi-Chemical Process

Reference has already been made to the low strength of coniferous pulps prepared by the semi-chemical process.

Some typical data bearing out this point, obtained at the Forest Products Laboratory in a study of the process as applied to jack pine, loblolly pine, and tamarack, appear in Table 3.

The pulps usually obtained are rather brash and of poor felting quality, but they bulk well, and it may be possible to use them in certain types of insulating board.

Better felting qualities and improved flexibility and consequently greater strength are obtained with digesting liquor of higher alkalinity. No great improvement in these qualities is obtained, however, without marked sacrifice of yield.

Further investigation of the process as applied to the conifers is desirable, especially as regards the selection of chemicals and the control of quality in the product.

Acknowledgments

The application of the semi-chemical process to extracted chestnut chips, to cottonwood and gum mill waste for board, and the commercial demonstration of the semi-chemical gum pulp in the manufacture of white paper, all referred to in the foregoing, were made possible by the generous co-operation of the Southern Extract Company, the Chicago Mill and Lumber Company, and the Carolina Fiber Company, respectively.

Special mention is due the Southern Extract Company for their patient co-operation in and financial support of the extended investigation which included eventually the establishment of the first commercial unit for a large-scale demonstration of the Laboratory's semi-chemical process.

Attention is directed to the fact that, with the approval of the Secretary of the U. S. Department of Agriculture, applications have been filed in the Patent Office for patents covering the semi-chemical process, the patents, if granted, to be administered with the approval of the Secretary of Agriculture. In view of the nature and extent of the financial co-operation rendered by the Southern Extract Company, and in return for certain manufacturing obligations assumed by the company, and, further, in the interest of a prompt and stable industrial development of the process, the Secretary of Agriculture has approved the granting to the Southern Extract Company, for a period of five years, of the exclusive right to use, and, with the Secretary's approval, to license the process in so far as it applies to the manufacture of board from chestnut wood and of corrugating board from hardwoods in general.

TABLE 3.—Cooking Data for Coniferous Pulps and Strength of Paper Made

Cook No.	Cooking Data: Maximum temperature of impregnation, Degrees centigrade	Chemical Used Per 100 pounds oven-dry wood: Na_2SO_3, pounds	$NaHCO_3$, calculated as Na_2CO_3, pounds	Na_2CO_3, pounds	NaOH, pounds	Maximum cooking temperature, Degrees centigrade	Time to maximum temperature after impregnation, hours	Time at maximum temperature, hours	Yield oven-dry basis, per cent	Strength of Machine Made Paper: Weight per ream 24x36x500, pounds	Bursting strength (Mullen), points	Strength factor (a)	Folding endurance, Number double folds	Weight per ream divided by ten thousandths of an inch thickness
Jack Pine—														
2019	...	15.1	...	...	6.1	162	0.5	3.5	69	51.0	21.4	0.42	140	0.94
2020	...	15.1	...	5.8	...	162	0.5	3.5	67	42.5	23.3	0.55	68	0.83
2021-2	...	14.7	3.2	...	...	162	0.5	3.5	74	47.0	14.6	0.31	15	0.92
2016	...	15.4	...	...	...	161	0.5	3.5	81	51.0	13.9	0.27	6	0.71
2022-1	...	16.4	4.8 ($NaHSO_3$)	...	...	161	0.5	3.5	84	88.0	13.3	0.15	1	0.90
2094	134	6.8	...	...	7.1	161	0.8	2.8	68	109.9b	48.6b	0.44b	80b	...
Loblolly Pine—														
Project 7168-1J20 2	...	10.0	...	...	2.0	160 to 162	1.0	3.0	69	...	...	...	...	...
Tamarack—														
Project 7168-3J19 10	103	20.5	...	...	...	160 to 168	...	4.0	(c)	...	...	...	...	...

a Bursting strength divided by weight per ream.
b Hand sheets beaten 60 minutes in pebble mill.
c Not determined.

The Bahrenburg Paper Corporation, of New York City, was awarded articles of incorporation under New York State laws recently to conduct a jobbing business in paper. The new corporation is capitalized at $45,000, and F. and H. A. and P. C. Bahrenburg were the incorporators.

To Further Interest in Vocational Training

To enable him to visit a wider range of mills and discuss with executives appropriate systems of training or study, the Joint Committee on Vocational Education of the pulp and paper industry has placed at the disposal of T. L. Crossley a limited portion of its funds.

Mr. Crossley has been for some years devoting much of his time to this work as director of extension service for the Institute of Industrial Arts, of whose faculty he is a member, but as this is not essentially a profit earning enterprise, his field has been limited to mills wherein a sufficient number of students was assured to warrant the overhead expense.

The committee feels that it is desirable to make Mr. Crossley's services available in a broader field to advise with management and men in the matter of training systems and individual study, either with the Wisconsin University Extension courses, the Institute of Industrial Arts or other schools for cases requiring special instruction.

Of the 140,000 employees in the pulp and paper industry in the United States and Canada, it appears that less than 2,000 are studying definitely to make pulp and paper a life work. In view of the rapid progress in mechanical equipment, it is imperative that steps be taken to bring a larger number of present operatives into line with this progress, and to prepare a future supply of employees having a good grounding in basic scientific principles coupled with sound practical experience.

The Joint Committee on Vocational Education believes that this is a matter for serious consideration by the directorship of the industry.

It should be arranged if possible to have Mr. Crossley meet the directors in cases where company policy requires their consideration. This will save time and assure more active support for the mill personnel.

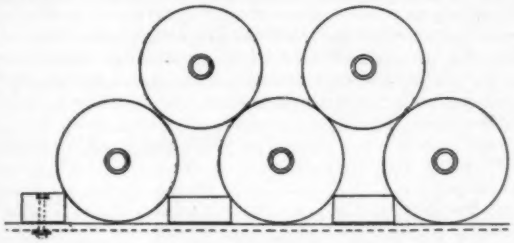
Those who are not acquainted with Mr. Crossley may be interested to know that he has been connected with the paper industry for twenty-five years, both in the mills and in consulting work. He is president of the Industrial Laboratories of Toronto, is a member of the Joint Committee on Vocational Education, has been since its inception chairman of the Committee on Education of the Technical Section of the Canadian Pulp and Paper Association, and has recently been appointed special lecturer in pulp and paper at the University of Toronto.

Mr. Crossley may be communicated with either through the office of the Joint Committee on Vocational Education, R. S. Kellogg, secretary, 342 Madison Avenue, New York, or at the Industrial Laboratories, Limited, Richmond and Sheppard streets, Toronto, Canada.

Practical Helps for the Mill Man

Piling Rolls

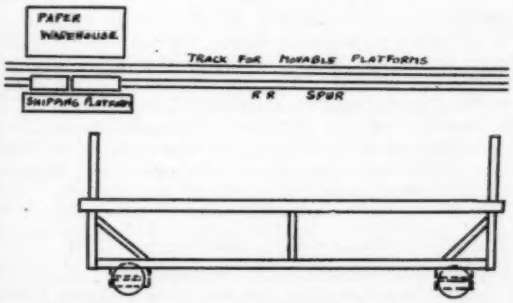
ONE of the little problems to be solved in piling rolls by means of an overhead crane using a grab rather than a shaft is how to maintain the space between the rolls so that there is space for the grab between each two rolls. In the ac-



companying sketch is shown the start of the pile against a timber bolted to the floor. Between each two rolls of the bottom tier, a wooden block is placed. This block is of such length that space is left between the rolls for the grab. The space between the rolls on the bottom tier will control the space between the rolls of the whole pile. In a recent Paper Industry, the Practical Helps Department showed a grab suitable for this work. One consideration in starting such a pile of rolls should be the strength of the floor and the load per square foot it is capable of carrying.

Solving A Special Unloading Platform

THIS one is like the puzzle about the man, the cabbage, the goat and the wolf and the boat, which could carry only two of them to the other side of the river at the same time.



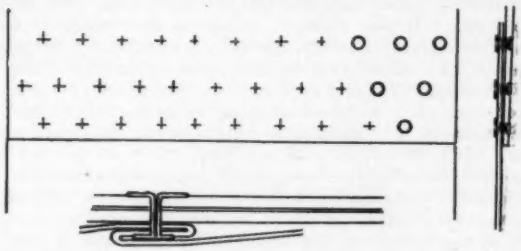
In a mill in Michigan they have a very peculiar railroad siding situation. The shipping platform is shown with two cars placed there. These are necessary for receiving the finished product of the mill. The railroad company will only give one shift a day. If in place of the track for movable platforms there was a railroad spur there would still be only one shift per day and only room for two cars at the paper warehouse. A long string of cars can be placed on the siding. The little train of movable platforms runs alongside several freight cars, which are then unloaded. The movable platforms are run up beside the paper warehouse and unloaded and then go back for another load. This is admittedly a special situation but the movable platform is a good device which might be used in other mills.

Sanding Calender Rolls

A WAD of paper going through the super-calenders usually puts a dent in one of the paper or fiber rolls. As these dents, or marks, become exaggerated the roll has to be rubbed with sand paper to eliminate this mark. This has always been about a two hour job for the calender man. A well known mill has adapted for this work a portable sandpapering machine such as is used by woodworkers or boatbuilders. There is a small motor, a flexible shaft and a device to hold a sandpaper disc while it rotates. The sandpaper is applied directly to the roll while it is in the stack and eliminates the use of a block of wood. The time is reduced to about twenty minutes.

Riveted Lap Seam in a Dryer Felt

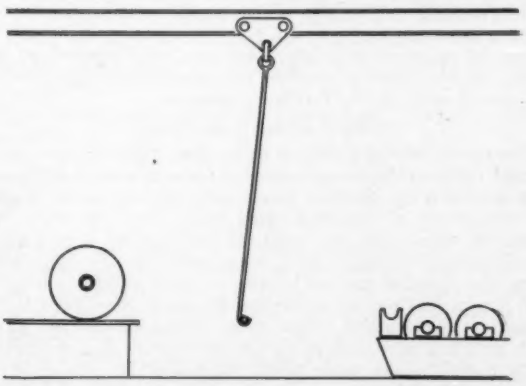
HIGH speed machines are bringing about dryer felt seam problems. One solution is shown in the sketch. The dryer felt is cut very carefully by means of a straight edge



and the slack is pulled out of the felt, great care being taken to keep the edges of the two ends parallel. The two ends are secured by being tacked to a frame in lap fashion as shown. About three rows of split copper rivets are put in the dryer felt, spaced some three to four inches apart. The heads should run next to the paper and be sunk pretty well into the canvas. If it is found that the heads mark the paper, they can be covered with strips of felt as shown in the large scale sketch of one rivet. One strip of wet felt will run all the way across the dryer felt. This protection can be put on as the rivets are being put in place.

Handling the Long Shaft on a 230-inch Machine

THE width of high speed news machines makes the handling of some of the parts a difficult task and in increased degree. One mill solves the problem of the windershaft in



simple but efficient manner as shown by the accompanying sketch. The trolley shown on the I-beam runs on the same beam as does the trolley for the rolls. The rod or cable hanging from it is single, but of sufficient strength to carry the windershaft safely. As the boys take the windershaft out of the set of rolls, they place one end of the shaft in the hook and push the shaft over until it is nearly balanced. Then it is a comparatively easy job to run the trolley forward until it is over the winder and take the shaft off of the hook onto the winder. This is practically a necessity with a shaft even as short as 160 inches.

The Cellulose Industry in Finland

Favorable Conditions Account for Remarkable Rise

VERY few countries in the world are better suited than Finland for developing large wood-working industries. This is clearly shown by the progress of the country's sawmilling industry which at present is the greatest supplier in Europe of sawn timber, the annual export exceeding one million standards. A hardly less distinguished position is held by the Finnish cellulose industry, which, although younger in years than the former, has attained a place as one of the world's leading producers of wood pulp, in importance next only to that of Canada and Sweden.

The reasons for Finland's remarkable rise in these fields of industrial activity are near at hand. Finland ranks first amongst all European countries in regard to forest land per hectare (2.471 acres) and head of population. The magnitude of her forests is signified by the fact that not less than 25,263,000 hectares are covered by forest land. The annual increment in timber stock is estimated at roughly 44.4 million cubic metres, the bulk of which is contributed by private forests. The other great natural asset is the practically unlimited supply of easily exploited and therefore cheap water-power derived from the numerous rapids in the rivers. The total amount of exploitable water power is estimated at about 1,500,000 effective horsepower, while at present only some 250,000 effective horsepower have been taken into the service of the various industries. There is, thus, still plenty of room for further progress within this industry, both as regards the supply of raw material and of water-power, and it is emphasized by eminent experts like Viscount Rothermere, that Finland is the only European country which is able considerably to develop her cellulose industry as far as supplies of pulp wood and water-power are concerned.

Origin of the Industry

The origin of the Finnish celulose industry was, naturally, very closely connected with the country's paper making industries which in the middle of the last century began to make headway, thanks to the introduction of wood pulp as raw-material in the production of paper.

The first Finnish cellulose mills were built in the eighties and adopted the natron and sulphite methods. In subsequent years a fair number of new mills came into existence, and the production rose gradually to 20,000 tons per annum in 1900, the bulk being absorbed by the paper mills.

In the early years of this century some ten new mills were erected, the majority adopting the sulphate method, and simultaneously the export trade began to attain more important figures. In 1913, the last normal pre-war year, the export of cellulose thus amounted to about 80,000 tons and several of the country's seventeen cellulose mills were working almost entirely for foreign customers.

Effects of the Great War

The Great War did not at once affect the fortunes of the Finnish cellulose industry because Russia was its chief foreign customer, and the Russian paper mills required ever increasing quantities of chemical wood pulp. But the crisis was bound to come with the political and economic collapse of the Russian Empire in 1917, as a result of the Revolution. Then, the Russian market became entirely closed to the Finnish export and nobody could foresee when it would again be opened. The Finnish mills were therefore obliged immediately to find new outlets for the ever increasing production, a task which was made none the easier by the disturbed economic conditions prevailing in most countries, belligerent as well as neutral ones.

It was a good thing that the favorable trade conditions just before and especially during the war had enabled the mills materially to raise the standard quality of the Finnish cellulose, thanks to employing up-to-date scientific methods and machinery. The industry was thus well able to hold its own in the competition with other producing countries once its products had become known in the various markets. In order to facilitate sales abroad, the producers formed in 1918, a joint selling organization, the Finnish Cellulose Union, which since that year through its agents in all more important countries of the world has conducted the sale of Finnish cellulose. The success has been a very remarkable one. In a few years' time the Finnish article has got a firm footing in all parts of the globe, with the result that the export since 1913 has increased by no less than 354 per cent. While the total production in 1918 was still only 22,000 tons, the year of the Civil War in Finland, it rose rapidly year by year, amounting in 1919 to 96,000, in 1920 to 163,000, in 1921 to 174,000, in 1922 to 254,000, in 1923 to 294,000, in 1924 to 316,000 and in 1925 to 367,000 tons.

Present Conditions

At present there are in Finland 18 sulphite pulp mills and 8 sulphate mills, but several mills are in course of erection, and the production will shortly rise to upwards of 500,000 tons per annum.

Great Britain and the United States are, of course, heading the list of consumers of Finnish cellulose. How accentuated their predominance actually is, is shown by the following table giving the quantities exported in 1925 to various countries:

	Sulphite tons	Sulphate tons
Great Britain	84,478	14,059
United States	54,843	23,842
Russia	29,502	1,195
Belgium	12,855	4,536
France	12,025	3,673
Germany	4,845	20,984

The aggregate f.o.b. value of the sulphite export rose last year to 487,416,734 Finnish marks, while that of the sulphate export amounted to 172,427,952 marks, making a grand total of 659,844,686 marks (about $17,000,000).

The progress in export to Great Britain and the States during the recent years may be seen from the subjoined table:

	1923	1924	1925
Great Britain			
Sulphite cell. tons	52,263	89,786	84,478
Sulphate cell. tons	12,650	18,376	14,059
United States			
Sulphite cell. tons	50,757	44,709	54,843
Sulphate cell. tons	22,981	22,985	23,842

A very interesting feature is the rapidly growing production of cellulose particularly suited for the manufacture of artificial silk. Of this article, consisting of bleached sulphite cellulose of the highest purity, at present about 30,000 tons are produced per annum and finding a ready sale.

The Finnish Cellulose Union has its headquarters in Helsingfors. Chairman is Mr. Jacob von Julin and General Manager is Mr. Walter Graesbeck, both well known to importers in the United States.

Industrial Research Laboratories in U. S.

The continuing demand for a new addition of Bulletin No. 16 of the National Research Council which contains a list of research laboratories in industrial establishments of the United States indicates that this list apparently fills a certain need in the industrial world, and confronts us with the fact that the material assembled in 1921 is five years out of date and should be revised at this time.

It is undoubtedly true that since 1921 a large number of industrial concerns have established research laboratories. It is also probably true that the 1921 list does not contain a complete roster of the firms which had laboratories at that time. In order that the new list may be as complete as possible, we are appealing to the readers of this journal who are connected with firms now maintaining research laboratories to send us a post-card giving the name and address of the firms with which they are connected. Questionnaires will then be sent to these firms.

The value of such a compilation lies first in its accuracy; second, in its completeness. The completeness of this compilation can be assured only by the co-operation of those in immediate touch with the various laboratories which should be included.

Please address your post-card to the Research Information Service, National Research Council, B and 21st streets, Washington, D. C.

Complimentary Dinner to Head of Finnish Mill

Colonel Gösta Serlachius of Finland and Norman W. Wilson Entertained at Sherry's By Dr. James E. Campbell

DR. JAMES E. CAMPBELL, president of the Dexter Sulphite Pulp and Paper Co., of Dexter, New York, was host on Wednesday, November 3, at a dinner at Sherry's Hotel, New York, in honor of Colonel Gösta Serlachius, of G. A. Serlachius Aktie Bolaget, Mantta, Finland, and Norman W. Wilson, president of the American Paper and Pulp Association, official representatives of the governments of Finland and Sweden joined with prominent American paper manufacturers in honor of Colonel Serlachius, a leader in the paper industry of Finland, and Norman W. Wilson.

This complimentary dinner indicated the growing feeling of friendship between the leaders of the paper industry of Finland, Sweden, Norway and Denmark, and the United States and emphasized the important part of the American Paper and Pulp Association in furthering such helpful international relationships.

Following the reception at which Dr. Campbell's guests were presented to Colonel Serlachius, Judge Jacob von Julin, the president of the Finnish Cellulose Association, Minister Aström of Finland, and others, and Sherry's splendid dinner, Dr. Campbell, in a pleasant, reminiscent manner, introduced the speakers.

Norman Wilson spoke on the necessity and mutual advantages of commercial co-operation between the leaders of the paper industry of the United States and those in the countries of our foreign markets.

Minister Aström entertained the guests with a stirring account of Finland's success in freeing herself from the chains of Bolshevism and attaining national freedom. He further explained the tremendous difficulties confronting Finland in obtaining new markets for her products which previously had gone largely to Russia.

George W. Sisson, Jr., former president of the American Paper and Pulp Association, discussed the common world problems of the pulp and paper industry and the advantages of friendly, co-operative contact between the leaders of the industry here and abroad.

K. F. Altio, Consul General of Finland, in expressing his appreciation of the cordial welcome accorded representatives of Finland by American paper manufacturers, expressed the hope that the representative business men coming to our shores from Finland in order to bring about better trade conditions between the two countries, would be privileged to entertain American paper manufacturers in Finland.

Jacob von Julin, president of the Finnish Cellulose Association, spoke briefly of the advantages which the mills in his country had secured from co-operative selling of their product. He extended greetings from his association and expressed the hope that American manufacturers would visit Finland.

Arthur C. Hastings, former president of the American Paper and Pulp Association, referred humorously to his retirement to Cape Cod and his facilities there for welcoming and entertaining his many friends in the paper industry both here and abroad.

Olaf H. Lamm, consul general of Sweden, spoke briefly of his government's desire to strengthen the ties of friendship between the two countries and to develop Sweden's international markets on sound economic lines.

The last speaker of the evening, Colonel Serlachius, in expressing his appreciation of the welcome accorded him and the other representatives of Finland, referred to the assistance which America had given Finland, and her appreciation of the friendly spirit existing between the peoples of the two countries. He told of Finland's forest wealth and the necessity of foreign help in developing this in the interests of Finland and her world trade.

Colonel Serlachius extended a very cordial invitation to American manufacturers to visit the Finnish mills and to become acquainted with the opportunities in Finland for commercial development.

The List of Guests

Col. Gösta Serlachius, chairman and managing director, C. A. Serlachius, Limited.
Norman W. Wilson, president, American Paper and Pulp Association.
Honorable L. Aström, Minister of the Republic of Finland to the United States.
K. F. Altio, Consul General of Finland.
Ingenior Harry Alfthen, G. A. Serlachius, Limited.
Frank A. Augsbury, president, Algonquin Paper Corporation.
Dr. Hugh P. Baker, executive secretary, American Paper and Pulp Association.
Ernst R. Behrend, president, Hammermill Paper Company.
Dr. C. W. Campbell, vice-president, Dexter Sulphite Pulp and Paper Company.
Dr. James E. Campbell, president, Dexter Sulphite Pulp and Paper Company.
Floyd L. Carlisle, president, St. Regis Paper Company.
Hugh J. Chisholm, president, Oxford Paper Company.
C. A. Crocker, president, Crocker-McElwain Company.
Donald Durant, Lee, Higginson & Co.
Herman Elsas, president, Continental Paper and Bag Mills Corporation.
P. H. Glatfelter, treasurer, P. H. Glatfelter Company.
A. R. Graustein, president, International Paper Company.
John M. Gylphe, director, A. Ahlstrom-Osakeyhtio.
Arthur C. Hastings, general manager, Cliff Paper Company.
J. P. Hummel, president, Hummel-Ross Fibre Corporation.
Orvar Hylin, vice-president, Lagerloef Trading Company.
Jacob von Julin, president, Finnish Cellulose Association.
I. Kuhe, vice-president, Continental Paper and Bag Mills Corporation.
Hans Lagerloef, president, Lagerloef Trading Company.
Olaf H. Lamm, Consul General of Sweden.
David L. Luke, president, West Virginia Pulp and Paper Company.
H. Edmund Machold, vice-president, St. Regis Paper Company.
Jay Madden, vice-president, Parsons & Whittemore.
Milton E. Marcuse, president, Bedford Pulp and Paper Company.
C. R. McMillen, vice-president, Union Bag and Paper Corporation.
Rudolph Pagenstecher, president, Central Paper Company.
F. Charles Schwedtman, vice-president, National City Bank.
Frank J. Sensenbrenner, vice-president, Kimberly-Clark Company.
Erich Serlachius, G. A. Serlachius, Limited.
George W. Sisson, Jr., president, Racquette River Paper Company.
Frank L. Stevens, president, Stevens and Thompson Paper Company.
Henry W. Stokes, president, York Haven Paper Company.
S. L. Wiflson, president, American Writing Paper Company.

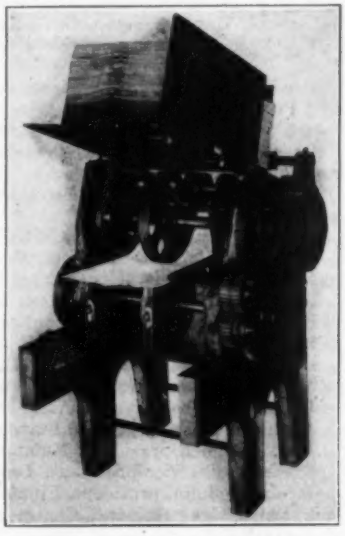
The American Nickel Corporation, Clearfield, Pa., exclusive representatives for the Mond Nickel Company, Ltd., London, England, is entering into the manufacture of nickel products, including rods, bars, sheets, tubes, wire and castings of 99 per cent pure nickel as well as 70 per cent and other alloys. Among the more highly manufactured products of the company are pure nickel condenser tubes and turbine blades and a line of domestic utensils for use in large institutions as well as the average household. While cooking equipment of pure nickel has been in use in European countries for many years, its use in the United States has been limited.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., announces the opening of a branch office in Jackson, Mich., at 512 Reynolds Bldg. Mr. L. F. Berry is the resident representative. The company also announces that Mr. Ernest Smith has been appointed sales engineer in the Oruro, Bolivia, office. This office is a branch of the company's district office at Santiago, Chile.

New Automatic Tube Feeder

Alfred C. Coty of the Coty Machine Co., Watertown, N. Y., recently returned from a trip to the middle west where he has been installing the Coty automatic tube feeder in various bag factories there. The feeders are being installed as rapidly as they can be turned out, as it is claimed that the process is much faster than the hand method.

In the manufacture of paper sacks, feeding into bottomers and presses has always been the neck of the bottle, as hand feeding was not fast enough to feed the full capacity of bottomers and presses. Several attempts have been made to perfect an automatic feeder. It is claimed for the Coty feeder that it increases production 50 per cent, cuts down waste 50 per cent and eliminates one or more operators per bottomer or press. At the same time, an automatic throw off device instantaneously stops the machine if a bag misses or plugs up, safeguarding both the feeder and the bottomer from injury in such cases.



Using the Coty feeder, misses and plug-ups are extremely rare, so that perfect clean bottoms, free from paste accumulated on the rolls, are made in the bottomer at high speed. By this method the bags can be counted from the bottomer by means of a bell that rings every 25 or 50 bags, or by other means.

Another advantage claimed is the labor saved on the finishing end of the bottomer in mending defective bags, caused by hand operators feeding tubes too far and not far enough. Another item of saving is the expense, time and trouble necessary to train operators to feed successfully by hand, for cheap labor can operate the Coty feeders with very little training, one operator taking care of at least two feeders.

A dozen bag factories are now using the machine. The Adams Bag Co., of Chagrin Falls, Ohio, took one on trial and accepted it after a most rigorous test. Since that time this company and all the other companies of the Chase organization of which it is a part, have become completely equipped with the Coty automatic feeders.

Last month a representative of a large foreign concern making paper sacks began negotiations with the Coty company for the purchase of a number of feeders and other machines, such as bottomers, tubers, enders for putting in the valve end of cement bags and complete sack machines to make cement bags and flour sacks.

Soda Recovery by Electrical Precipitation

Electrical precipitation as applied to the recovery of soda pulp and sulphate pulp mills was touched upon in an address by P. E. Landolt before the American Section of the Société de Chimie Industrielle, at a meeting in the Chemists' Club, New York, on Friday, October 22. Mr. Landolt is eastern manager of the Western Precipitation Company of California, with offices at 25 West 43rd street, New York. He said that electrical precipitation was becoming increasingly important as a means of cleaning the SO_2 gas obtained by burning pyrites, owing to the sulphur shortage which is likely to turn some pulp manufacturers to the use of pyrites as an economical source of sulphur dioxide. By using pyrites, Mr. Landolt said that a saving of $1 a ton could be made on the price of sulphite pulp at the present price of brimstone in Canada particularly. He said that some experiments have been made to develop the application of electrical precipitation in sulphate pulp manufacture and that its value was established in the recovery of soda salts in soda pulp and kraft mills.

Arc Welding Makes Saving

An electric arc welding operation on a water wheel casing was recently performed at the paper mill of the Parker Young Co., Lincoln, N. H., that saved the company approximately $800 and completed the job in eleven weeks' less time than otherwise possible. The water wheel bearing had become worn and the wheel had moved over so that a section of the casing had worn away.

With the aid of a Westinghouse 200 ampere, three phase, 25 cycle, 550 volt, portable arc welding set the worn section, about 10 inches wide and three-quarters to one inch deep around the entire periphery of the casing, was welded. In some spots the metal had worn away entirely. The job was completed at a cost of approximately $200 and in seven days' time.

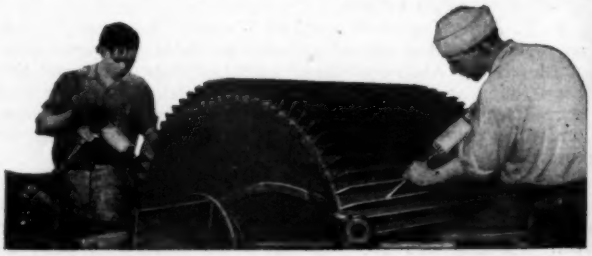
Chip Board for Gypsum Plaster Board

In the manufacture of gypsum plaster board the degree of rosin sizing of the chip board used seems to be a critical factor. Water resistance tests of four samples of chip board used by a manufacturer of gypsum plaster board showed there was considerable variation in the degree of sizing. The samples were tested by the sugar-dye indicator method, the specimens being floated on water with the upper surface exposed to the air. Two of the samples said by the manufacturer to be unsatisfactory gave a water transudation time of 45 and 50 minutes, respectively. The satisfactory boards were medium sized, the transudation period being 20 to 25 minutes, respectively. From the results of these and other tests a medium degree of sizing appears to be desirable, either too little or too much rosin sizing giving poor results.

Handy Tool for Use in Paper Mills

In a bulletin issued by the Syntron Co. (National Electric Mfg. Co.), Pittsburgh, Pa., the Syntron Electric Hammer is described.

The hammer is designed for a number of uses in paper mills. Chief of these is removing scale from beater rolls,



washer and jordan bars, rag ears, etc., and in chipping jordan shells and plugs. One of the claims made for the hammer by the manufacturer is that in an actual test the scale was removed from two large sized beater rolls in one day by two men. This same job usually took eight men two days working by hand.

The tool is light and compact, easily carried by one man, and can be operated from any ordinary electric light socket. Some of the other claims made for it are that it will drill three inches into concrete, chip or channel as fast as ten men, vibrate and tamp concrete forms, and numerous other jobs of maintenance or construction. The hammer uses about as much current as an electric laundry iron.

T. S. Estabrook, manager of Chicago Mill & Lumber Company's fiber products division, who resigned when this company consolidated with a number of other mills, under the name of the Container Corporation of America, has been made general manager of the Cornell Wood Products Co., of Cornell, Wis.

News Briefs from Washington

Consular Reports

New Woodpulp Mill in Norway.—It is also reported that a new woodpulp mill is to be established at Risor, in southern Norway. The Director of the present Risor Traemassefabrik is now in England conferring with a British concern in connection with the new construction project. The new building is to be considered as an expansion of the old mill which is in itself of quite recent construction. The present capacity of the Risor mill is approximately 12,000 tons of mechanical pulp annually, and the intention is to expand its capacity from 40,000 to 50,000 tons.

Swedish Market Prices Advance.—According to a recent cable from Assistant Trade Commissioner Kekich at Stockholm, the Swedish pulp and paper market continues highly satisfactory. Prices, with the exception of newsprint in rolls and greaseproof paper, recently advanced, present prices for roll or sheet kraft ranging from $4.74 to $7.17 per hundred pounds and for M. G. sulphite in sheets from $4.50 to $6.81. Quotations on the latter in rolls range about 12 cents per hundred pounds less. There have been no changes in pulp prices except for a slight decrease in the maximum asked for mechanical groundwood.

Smyrna Possible Field for Cartons.—Consul S. W. Honaker at Smyrna in a late report calls attention to the possibilities of the Smyrna Consular District as a field for the sale of paper boxes and cartons, provided the local fig and raisin packing industry can be persuaded of the desirability of substituting paper cartons and boxes for wooden containers. The consumption of wooden boxes by the fruit packers approximates more than 3,000,000 during the normal year, considerable more than half of which are the small boxes used for shipping figs to foreign countries. The wood used in the manufacture of these containers is obtained chiefly from Rumania, and the heavy customs charges and governmental expenses in connection with the importation of lumber for this purpose causes these shipping cases to form one of the heaviest charges which the fruit packers have to meet.

Italians Impose Duty on Newsprint.—The Italian official gazette of October 18 published a ministerial decree establishing a duty of 8 lire per quintal (approximately 15½ cents per hundred pounds) on newsprint paper entering the country. The new decree became effective on November 1, this year.

Germany Seeks Centralization.—Assistant Trade Commissioner Nash at Berlin, Germany, states that according to a recent article appearing in the "Papier Zeitung" there is some agitation looking to a further centralization in the trade and industry there. The suggestions made include (1) the creation of a common trade center where those in the business can meet and discuss conditions; (2) the creation of a paper trade bank; (3) the selection of confidential representatives from the producing, trading, and converting branches of the industry to conduct negotiations with credit insurance concerns for the purpose of obtaining terms more favorable than those enjoyed at present; (4) common action on the part of creditors in cases of bankruptcy, with the interests of the trade at heart; and (5) the choice of an official trade paper which will permit a continuous exchange of views and the furnishing of information to isolated colleagues. Business in the paper trade is stated to have continued without improvement despite the activities of the cartels and an organization of a sort that will insure recovery is desired.

Roofing Industry Increases in Czechoslovakia.—Commercial Attaché Baldwin at Prague, Czechoslovakia, reports that the number of factories producing tar-impregnated roofing papers and felts has increased during the last three or four years from 7 to 75 and that a severe shortage of coal tar has developed as a result of the use of these products and the competition the roofing paper industry has had to meet in connection with the increased use of coal tar in highway construction. All the tar consuming industries are petitioning reduction in the import duties now levied on this material.

Binder Board Conference

A general conference of manufacturers, distributors, and users of binder board, planned several months ago by the Division of Simplified Practice of the Department of Commerce, met at 10:30 a. m. October 22, in the Commerce Building, Washington, D. C. The conference was for the purpose of considering and determining upon a simplified practice recommendation covering binder board generally.

Surveys recently completed by the Division of Simplified Practice, in accordance with its program of approximately five years standing, were at the request of makers of binder board presented to the association, and steps taken for the development of a recommendation comprising five classes of board. The association represents from 85 to 90 per cent of the total output of binder board, and although the industry has been in existence for over one hundred years, this is the first time a scientific analysis has been made of the production, needs, and the sales of the industry.

The figures supplied for the purpose of the conference cover the year 1924 and show a gross turnover of one million bundles, or about twenty-five thousand tons, by manufacturers during that year. This quantity was produced in 1,718 different sizes of sheets, varying by as little as ¼ inch in dimension, and in from one to twenty-seven different thicknesses, making a total of 1928 different individual items. Of these the survey showed that 945 were sold in individual lots of less than one thousand bundles each, and that all of these amounted to something less than seven per cent of the total sales. There were 790 items which were sold in lots of from one hundred to one thousand bundles yearly, and in only seventeen items did the annual sales represent more than one per cent of the grand total for the year, the aggregate of these seventeen being twenty-six per cent of the annual sales.

When these figures were studied the representatives of the manufacturers decided to recommend to the trade that five stock sizes be manufactured, although no recommendation was made as to thickness. These five sizes will replace the 718 sizes now being produced, the proposed reduction being 99.3 per cent. The classes selected by size include the following, their importance being gauged by the percentage of 1924 sales shown:

20x30 (including 20½x30½)	4.67%
23x29 (including 22x28 and 22½x28½)	6.23%
26x32	7.56%
26x38	4.34%
34x44 (including 33x44)	1.44%

It was decided by the manufacturers to include in their recommendation a provision that for the entire industry to make a size of board that could be included as a "stock" size, the minimum annual consumption shall be 250 tons in a single order or a series of orders aggregating this amount, this volume being considered sufficient to hold down overhead cost and other items of expense to a point which would warrant carrying it on hand.

It was the consensus of opinion of the conference that an economic mill run of not less than five tons would justify a special size not covered by the recommended size list above.

The adoption of these sizes was made effective April 1, 1927, subject, however, to revisions and recommendations from the consumers of binder board, and it is expected that a further conference will be held with the Employing Book Binders Association of America in order that some definite agreement may be reached which will result in the adoption of sizes suitable to both producers and consumers. The purpose of setting the date to which these sizes should be made effective six months ahead was to permit such joint conference and to give sufficient time for a thorough consideration of all questions which must come up concerning them insofar as they affect other branches of the trade.

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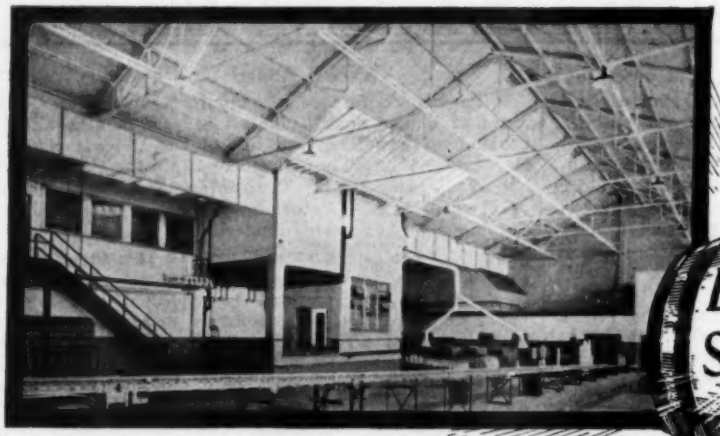

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Meeting of Miami Superintendents

The Miami Valley superintendents held their regular meeting Saturday, October 30, at the Hotel Manchester, Middletown. This was the first meeting of the year under new officers with Mr. H. F. Funsett, superintendent of the Hagar Straw Board and Paper Co., as chairman.

In a brief talk, Mr. Funsett outlined plans which are already under way for obtaining interesting speakers for the meetings during the coming season. Practical men will be used on the programs to present practical problems in the mills and in connection with this, moving pictures, charts, etc., that the talk and discussions will be clearly understood and worth while.

Mr. R. Skagerberg, of Drying Systems, Inc., Chicago, presented a paper on "Ventilation in the Machine Room." His entire time is devoted to work in the paper mill and his knowledge of air conditioning permitted him to cover his subject thoroughly.

Mr. R. L. Eminger, national secretary of the association, gave a report of a conference on "Vocational Education." This work is under the leadership of R. W. Jenkins of the Ohio State University. Resultant of this conference, a book containing fifty-four pages has been published and used for this study. The first edition has been exhausted, but a second edition will soon be off the press and will be distributed to any persons who might want them at the actual cost of manufacture. This book is very helpful in training foremen and has some good suggestions for men who are in the making.

At one of the meetings during this winter season, the superintendents will have the pleasure of seeing moving pictures of paper mills of Europe. Mr. Wm. B. Fulton of the Fulton Engineering Company is leaving very shortly for a visit to European mills and expects to obtain some good views. He has consented to present them to the Miami Valley division as soon as it is possible to do so after his return. It is also possible that these will be shown at the national convention in the spring of next year.

The officers are also contemplating something aside from the regular paper mill talk at one of the meetings. This will be a moving picture of the history of "Oil." This picture is very interesting and shows the different steps down to the present day methods of obtaining oil and the process of refining.

Mr. Eminger gave a report on the Green Bay meeting which he attended and was very much enthused over the interest the superintendents displayed in that division. He expects to attend the meeting of the Southern division November 19th and 20th.

The next meeting of the Miami Valley division will be held November 27, at the Manchester Hotel, Middletown, Ohio. Superintendents who do not attend the November meeting will miss something good.

Meeting of the News Print Bureau

The News Print Service Bureau, an organization which comprises in its membership most of the newsprint paper manufacturers in North America, held its fall meeting in New York at the Canadian Club and the Hotel Commodore, on October 19 and 20, 1926. The offices of the News Print Service Bureau, in charge of Royal S. Kellogg, secretary, are at 342 Madison Avenue, New York.

The cost accountants and engineers of bureau members met on Tuesday, October 19, at the Canadian Club, Hotel Belmont, to discuss labor costs in groundwood and newsprint mills, and operating reports. Comparisons were also made of fast and wide paper machines and between magazine and pocket grinders.

At the morning sitting, Eric A. Camman, of Peat, Marwick, Mitchell & Co., New York, presented a paper on "Budgetary Analysis of Actual and Expected Net Profits."

Luncheon was served in the club dining room and following it Walter N. Polakov, consulting engineer, New York, delivered an address on "Benefits Resulting from Incentive and Inducements in Paper Mills," which was discussed by the engineers present.

The question of determining consumption of pulpwood, coal and limestone and inventory control thereof were considered. A tabulation of the present method of determining consumption of these raw materials was shown, together with a notation of the degree of accuracy obtained in actual practice.

There was a good attendance of representatives of mills in membership at the general meeting of the bureau in the Hotel Commodore on Wednesday, October 20, a number of prominent Canadian manufacturers being observed, among others L. R. Wilson, president of the Canadian Pulp and Paper Association; Louis Armstrong, of the Laurentide Company, P. B. Wilson, of the Spanish River Pulp and Paper Mills Ltd., and Donald McIntosh of Price Bros. & Co. Ltd., Kenogami, Que.

Louis Bloch, president of the Crown Willamette Paper Company, presided at the morning sitting when reports were submitted on newsprint production, shipments and stocks; imports of overseas paper; newsprint consumption and publishers' stocks; volume of advertising; new machines 1926-1927 and general conditions throughout the industry.

Luncheon was served in the Tavern Room at 12:30 P. M. at which addresses were made by Arthur T. Robb, jr., of Editor and Publisher and Byron W. Holt, of Goodbody & Co.

Glatfelter Builds Addition to Finishing Department

The last of the old mill buildings of the P. H. Glatfelter Co., erected in 1899, is to be remodeled into a modern daylight building. The new addition will be a one-story building, 120 feet by 167 feet, of brick and steel, with a car shed to accommodate three 40-foot box cars. The finishing department will be increased by 20,000 square feet of floor space, which will greatly facilitate the finishing of the product.

The new building will house the present 44-, 54-, 68- and 70-inch Holyoke supercalender stacks, which are to be remodeled and modernly equipped with labor-saving devices for handling the paper rolls. New equipment, such as trimmers, cutters, sorting and finishing tables will be placed on the added floor space.

An order has just been placed with the E. P. Lawson Company, of New York City, for a large 94-inch Seybold Trimmer. This is said to be the largest type trimming machine in the East at this time.

An electric crane will handle the paper to be calendered and for handling the heavy rolls of the supers. On a mezzanine floor at the north end of the building a large sample room 40 feet by 40 feet will be used for filing and testing of all paper manufactured.

Testimonial Dinner to Col. H. A. Metz

On October 22, the associates of Col. H. A. Metz in the General Dyestuff Corp. and the H. A. Metz Laboratories, celebrated the completion of his forty-five years of continuous service in the chemical line, at the University Club, New York City. Mr. Metz entered the employ of P. Schulze-Berge as office boy on October 22, 1881. This concern, after many changes, became the General Dyestuff Corp., affiliated with Kuttroff, Pickhardt & Co., and The Grasselli Dyestuff Corp.

Dr. Wilfred Grief, representative of the Farbwerke, vormals Meister Lucius & Bruening, presented Mr. Metz with a silver plaque and a silver service as an expression of friendship. Mr. Metz, in his speech, called attention to the fact that when his associates celebrated his 25th anniversary there were over sixty present, and out of that number about twenty-five had passed away. He hoped that all those present at his 45th anniversary would be present at his 50th.

W. H. Swanson of the pulp and paper staff of the U. S. Forest Products Laboratory, Madison, Wis., resigned October 18 to accept a position on the research staff of the Champion Fiber Company of Canton, North Carolina. Mr. Swanson's work at the federal laboratory consisted mostly of investigations of the sulphite pulping process and he will be in charge of the southern company's research along the same lines.

The Power Specialty Co., New York City, has opened an additional branch office at 209 Grant Ave., Milwaukee, Wis., to extend their services to present and prospective users of Power Specialty equipment.

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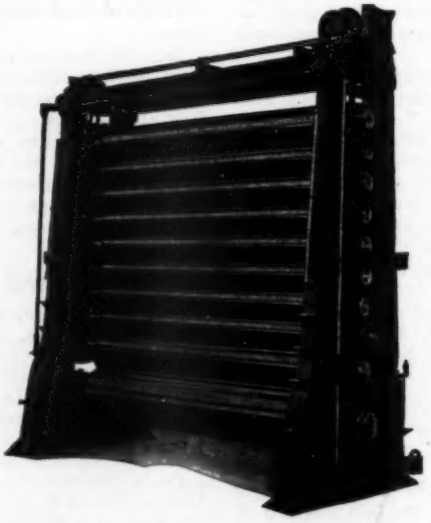

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NEW YORK CITY NEWS

Stock Dealers' Dinner Enjoyable

Saturday evening, October 16, was a big night for the metropolitan dealers in papermakers' supplies for on that night the annual Ladies' Night dinner and dance of the New York Association of Dealers in Paper Mill Supplies, Inc., was given in the Hotel Astor. The South Garden of the hotel was beautifully decorated for the occasion, and about 125 members of the association and their wives or sisters or sweethearts enjoyed an excellent dinner, a fine vaudeville program during the serving of dinner and plenty of dancing later in the evening.

Tables were arranged so that everyone present was afforded a splendid view of a platform in the center of the dining room where the vaudeville artists performed their turns. There were several vocalists who sang popular and sentimental airs, instrumental artists, a couple of talented dancers and a professional humorist, and this array of entertainers kept the diners in good spirits during dinner. Robert Santangelo, an Assistant District Attorney of New York County, was a guest and was called on for a few remarks.

The committee having the dinner arrangements in hand consisted of Walter H. Martens, of George W. Millar & Co., Inc.; Joseph P. Gaccione, of Gaccione Bros. & Co., Inc., and Joseph Carrano, of Carrano Bros., and they were given a vote of thanks, at the suggestion of Charles R. McBride, president of the association, for their efforts in providing so enjoyable an event.

The well known Koenigsberg and Norddeutsche brands of strong and easy bleaching sulphite wood pulps will be sold exclusively in the United States after January 1 next by Parsons & Whittemore, Inc., of 299 Broadway, New York, who have just been awarded the agencies of these German pulp mills. These brands of pulp have enjoyed a wide sale in this country for some years past and in view of the many changes that have been made in the mills in Germany recently which will improve the quality considerably, it is expected their sale will be further increased in the United States. Heretofore, these brands of pulp have been sold here by the firm of H. Hollesen, Inc., of New York.

Mrs. Ruth Bynner Overton, wife of Frank C. Overton, of Castle & Overton, Inc., importers of and dealers in paper mill supplies of 200 Fifth avenue, New York, died at the Overton summer home in Manchester, Vt., on October 21. Mrs. Overton was in her 56th year and had been in poor health for several years. She is survived by her husband, a daughter and two sons, one of whom, Carlton B. Overton, also is with Castle & Overton, Inc.

Rag Importers Adopt Purchase Terms

A representative group of importers of papermaking rags attended a special meeting of the Foreign Trade Division of the National Association of Waste Material Dealers, Inc., at the Hotel Astor in New York on October 22 and approved and adopted a set of terms and conditions covering purchases of rags in Europe for shipment to the United States.

The meeting was presided over by Chairman J. W. Long, of S. Birkenstein & Sons, New York and Chicago, and discussion was confined to the importing agreement. A resolution also was proposed and adopted that the secretary of the association obtain as many signatures of rag importing concerns as possible. The agreement of conditions becomes effective January 1, 1927.

G. H. Rady, of the E. J. Keller Company, Inc., importers of paper manufacturers' supplies of 200 Fifth avenue, New York, sailed on the S.S. Berengaria October 13 for a business trip to Europe. He will be abroad about five weeks.

The H. J. Grey Company, paper merchants of 228 East Forty-fourth street, New York, celebrated its sixth anniversary on November 1, the event being appropriately observed by a dinner, followed by a theatre party, attended by Mr. Gray and his staff of sixteen.

Adam K. Luke, of the West Virginia Pulp and Paper Company, whose main offices are at 200 Fifth avenue, New York, is at the head, as chairman, of a special committee representing paper manufacturers and merchants which will endeavor to secure the maximum response from paper men in the metropolitan area to the annual Red Cross Roll Call opening on Armistice Day, November 11.

The Sharp Paper and Specialty Company, of New York City, has been incorporated under New York State laws with a capital of $25,000 by L. Brinker, A. Last and A. Gilbert.

The firm of Sol Ash, Inc., dealer in and importer of papermakers' supplies of practically every description, has moved its offices from 1440 Broadway to its warehouse building at 356 West Eleventh street, New York, where all of the interests of the company are now concentrated under one roof. The firm makes a specialty of high-grade packing of waste paper but also handles rags, new and old and foreign and domestic; wood pulp, and other materials.

NORTHERN NEW YORK NEWS

John R. Coburn Dead

John R. Coburn, aged 56, formerly a well known paper mill man in Northern New York, died in a Watertown hospital Oct. 16, after a long illness. He was a native of Carthage and early became interested in the pulp and paper industry. He was one of the organizers of the Newton Falls Paper company, being associated with the late James A. Outterson and James A. Newton. The company built the mill at Newton Falls, then almost unbroken wilderness, and it was one of the largest mills in the state.

Mr. Coburn severed his connection with the Newton Falls company in 1898 and bought an interest in the Island Paper company of Carthage. Associated with him in this industry were Peter Yousey, Augustus Maxwell and later Charles D. Pratt. In 1905 Mr. Coburn sold his paper mill interests and moved to New York where he engaged in the bond business. Later he went to Detroit where he lived for eight years. A short time ago he returned to Watertown on account of ill health and his condition grew worse until his death.

The International Brotherhood of Paper Makers reports that two locals in and around Three Rivers, P. Q., will receive charters. When the strike against the International Paper Company was called in 1920, there was a slump in union membership of several hundred. Since that time the International Brotherhood has been trying to regain the lost membership.

The equipment of the Aetna emergency hospital in Carthage has been moved to the plant of the National Paper Products Company, where a first aid station will be maintained under charge of a nurse.

St. Regis Paper Co. Closes Rossing Plant

The rossing plant of the St. Regis Paper Company at West Carthage has been closed for the winter, having completed the work of rossing the last big drive of logs to come down the river for at least the next 25 years. It is said that the plant will be in operation for a short time next summer cleaning up a small drive. This year's drive amounted to about 45,000 cords. Officials of the company say that the last of the logging operations along the Black river water shed have been brought to a close and that the second timber will not be available until 1951.

The work of the rossing plant was carried on in a large way, the St. Regis company having had large areas of forest in the mountains. Special pulp cars were used to transport the logs to the company's mill at Defereit.

This service makes friends for your paper

for PAPER

YOU secure dependable results from the use of Kalbfleisch Rosin Size. The service that you also get adds to the advantages of this sizing.

It is an established fact that the smooth operation of the sizing process is necessary to trouble-free production. So Kalbfleisch Engineers are glad to place at your disposal all the information they have acquired from their long and close acquaintance with sizing processes.

The service of Kalbfleisch Engineers is centered upon securing your satisfaction by means of the De Cew Patented Processes with which Kalbfleisch Rosin Size is used.

They are glad to cooperate with you to the end that your sizing operations will measure up to the highest standards of efficiency.

See page 466 in the 1926 Paper and Pulp Mill Catalog

The
KALBFLEISCH
Corporation

200 Fifth Ave. New York

Factories:

Erie, Pennsylvania
Brooklyn, New York
Kalamazoo, Michigan
Elizabeth, New Jersey
Chattanooga, Tennessee
Waterbury, Connecticut

Clarence Fisher, yard foreman of the Algonquin Paper mill at Ogdensburg, has resigned and has moved to Milwaukee where he will reside in the future.

Charles H. Kelly, an employee of the Algonquin Paper mill at Ogdensburg, was called home from work recently and found that the stork had preceded him, leaving a daughter, the 12th child born to Mr. and Mrs. Kelly. The family consists of seven sons and five daughters.

The principal business office of the Independent Paper Mills, Inc., of Brooklyn, N. Y., has been moved to Plattsburg, N. Y., according to papers filed in the secretary of state's office.

A default judgment in favor of the St. Regis Paper company has been entered in the county court in Jefferson county against Benjamin Rosenblatt doing business under the name of the Columbia Scrap Metal Company of 550 West 170th street, New York. The action was brought to recover $1,390.26 for scrap metal sold the defendant.

Some years ago the West End Paper Company secured a portion of their wood from the mountains and this wood was delivered by way of the river. Chutes were built around the dams. There are rumors that a silk company may purchase the rossing plant and transform it into a silk mill.

Four New Locals Issued Charters

President W. R. Smith of the International Brotherhood of Paper makers, has just issued charters to four new locals. One of these is located in Orange, Texas. Others are at Gouverneur, N. Y., Carthage, N. Y., and Port Alfred, P. Q.

Arthur Huggins, vice president of the Union, notified President Smith that the mills in the province of Quebec would close down at 12 Saturday night and reopen at 12 Sunday night, in accordance with an order issued by the Premier of the province. For some time the Lord's day alliance has been working to the end that the mills be compelled to observe these hours rather than to shut down at 8 Sunday morning and reopen Monday at the same hour.

The St. Regis Paper company is involved in a deal with the International Paper company for the purchase of timber lands owned by the Connecticut Valley Lumber Company. A new corporation will be formed for the purchase of the property. The New England power company will retain the water power rights. The land consists of 320,000 acres in Northern New Hampshire and Vermont.

William Lamont of Abitibi, P. Q., has taken up his duties as superintendent of the Champion Paper Company. Mr. Lamont, a former machine tender for the Abitibi Paper Company, succeeds H. C. Rockwood. Mr. Lamont formerly worked for the Champion Paper Company 24 years ago as back tender. He was also employed by the St. Regis Paper Company before going to Canada.

The A. P. W. Paper Company of Albany has started its weekly wood pulp service. Wood pulp is brought by steamer from Nova Scotia to the port of Albany by way of the Hudson river and is distributed within a radius of 400 miles from Albany. The company expects to import about 9,000 tons of wood pulp before winter closes navigation in the Hudson and next spring expects to enlarge the facilities for handling the pulp.

The court has taken papers for review in the case of the West End Paper Company against Benno Levison and Lois Levison. The case involves a contract executed Aug. 28, 1924, whereby the plaintiff agreed to receive 2,500 cords of pulpwood from a tract in lower Quebec. After paying $17,000 on the contract the plaintiff never received any of the wood and alleges the reason it was not delivered was because there were liens held against it for labor, because former owners of the wood went into bankruptcy and their creditors laid claim to the wood. The defendant alleges that this is not true, and seeks to recover a balance of several thousand dollars on the contract, claiming that the plaintiff could have had the wood if he acted in good faith, and also claiming that the plaintiff breached the contract.

John P. Burke of Fort Edward, N. Y., formerly of Deferiet, was elected president and secretary of the International Brotherhood of Pulp, Sulphite and Paper Mill workers at the closing session of the biennial convention in Montreal. Other elected officers are: First vice president, Maurice Labelle, Ottawa; second vice president, H. W. Sullivan, Worcester, Mass.; third vice president, J. W. Taylor, Pejepscot, Me.; fourth vice president, Alex Gibson, Port Arthur, Ont.; fifth vice president, Ed Lanner, Green Bay, Wis.; sixth vice president, William Cutliff, Millinocket, Me.; treasurer, B. Doody, Palmer, N. Y.

Lower Freight Rates Ordered

Lower freight rates on wood pulp between Delano Junction, connecting point for the Delaware & Hudson railroad company and the Ticonderoga railroad, and Housatonic, Mass., have been ordered by the interstate commerce commission. The commission's decision was entered in the case of the B. D. Rising Paper company, manufacturers of Housatonic, Mass., against the D. & H. and other railroads, which alleged unreasonable rates charged on shipments of pulpwood from Ticonderoga, N. Y., and from Great Works, Me.

The shipments moved from Ticonderoga to Delano Junction, then over the D. & H., N. Y. C. and B. & A. to Housatonic. Charges were collected on the basis of a combination rate made up of 13 cents a long ton from Ticonderoga to Delano Junction, 28½ cents per 100 pounds from Delano Junction to Pittsfield, Mass., and 11½ cents per 100 pounds from there to Housatonic. There is, however, a combination rate of 25 cents per 100 pounds of wood pulp from Delano Junction to Housatonic, via Albany, a route 27 miles shorter than that over which the shipments in the controversy were carried. The commission ordered a new rate between Delano Junction and Housatonic not to exceed 21 cents per 100 pounds.

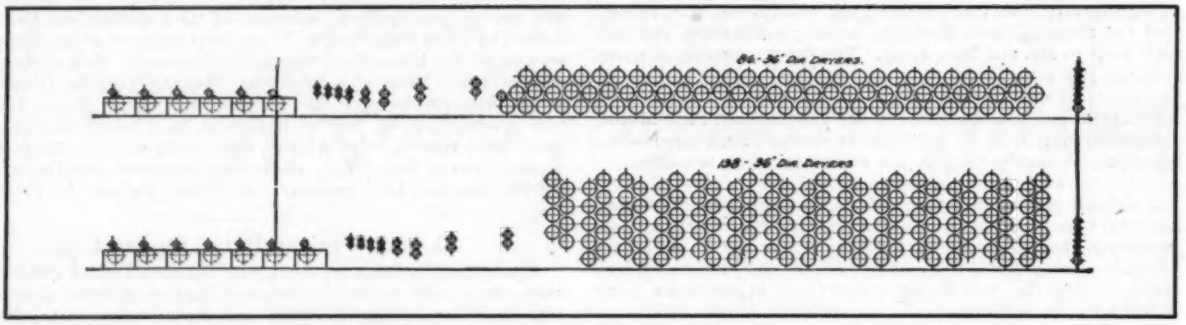
Complaints Filed Against B. & M. R. R.

Briefs have been filed by J. D. Stevens, traffic manager for the Stevens and Thompson Paper company of Albany against the Boston & Maine railroad. The complaining company operates mills at North Hoosick and Walloomsac, N. Y. The controversy concerns shipments of oatmeal and ingrain wall papers.

The complaint alleges discrimination in the matter of rates accorded to the Harmon Paper Company at Brownville, N. Y. The brief attacked the practice of the B. & M. in serving the complainant's mills, the present less than carload ratings of second class on wall paper, the present carload ratings on fifth class and the practices of the New York Central in serving the Harmon Paper company at Brownville. It was contended that a sixth class rating on carload shipments is the maximum reasonable rating. This rating, it is charged, is given the Brownville mill.

Samuel C. Rogers & Co., Buffalo, N. Y., has announced to the trade in general that they have not sold out or transferred their business or any part of it, nor given any rights or privileges to others to use the name of Rogers in the manufacture of knife grinders and saw sharpeners, and that they will regard any such use of that name as an infringement. This announcement was made because of a false impression prevailing in the trade over the sale of the knife grinder business of the Eagle Machine Works, Buffalo, N. Y.

An income of $175,455 annually accrues to the International Paper Co. through the recent inauguration of dividends at the rate of $1.50 annually on the stock of the New England Power Association. International holds 116,970 shares of this stock, which it purchased in 1925 in order to form a connection through which it could market surplus power. Income from its New England Power stock is equivalent to 35 cents a share annually on the 500,000 shares of International Paper common stock outstanding, on which the present dividend is $2 a year.



The upper illustration shows a side elevation of the machine arrangement before rebuilding. The lower shows the machine after rebuilding and adding one vat and 52 additional dryers arranged five feet high. You will notice that the new machine, although 60 per cent larger, occupies no more space than the old one.

This Picture Tells the Story!

LATE in 1925, the Franklin Board and Paper Mills felt the need of enlarging their production to meet increased demand.

Without in any way enlarging their floor space they have increased the size of their paper making machine from six vats and 86 dryers to seven vats and 138 dryers. The remodeled machine, although more than 60 per cent greater in dryer capacity takes up no more space than the old machine.

It is the economy of floor space that is probably the strongest talking point of Vertical Dryers. It's of particular value to those mills who feel the need of increased production, yet who cannot see their way clear to increase the amount of their floor space.

The dryer section of the Franklin Board and Paper Mills Machine showing 138—36" diameter dryers in our patented vertical arrangement 5 high.

Moreover, because they do away with vapor pockets, Vertical Dryers give you more efficient drying as well as more economical drying. They consume less steam.

Just say the word and we'll be glad to lay the complete facts before you.

THE BLACK-CLAWSON CO., Hamilton, Ohio
Established 1873
Export Offices: 15 Park Row, New York City
Builders of Highest Quality Paper and Pulp Mill Machinery.
Patentees and Sole Builders of Vertical Dryers.

BLACK-CLAWSON

VERTICAL DRYERS

Built with Machine-Tool Accuracy

NEW ENGLAND NEWS

I. P. Company Wins Lawsuit

After five years of litigation the International Paper Co. emerges victorious in the most important lawsuit in which it has been engaged since the war. This suit was brought in the Federal District Court in 1921-22 by the Beacon Oil Co., at Boston with whom the International had a contract for the delivery of oil to two of its mills in Maine. The strike in the newsprint mills of New England in 1921 and the business depression of the same year which affected, particularly the demand for bag paper, were advanced as excuses by the paper company for the non-acceptance of a part of its oil under contract.

The first trial resulted in a verdict of $390,143 for the oil company. Appealed by the International, the Circuit Court ordered a new trial. This was held and a jury verdict of $3,122 resulted tantamount to victory for the paper company. The Beacon Oil Co. appealed this decision to the Circuit Court and the latter has just handed down its opinion confirming the last verdict in the District Court at Boston.

Thus it is definitely established that the non-acceptance of goods in the event of a strike excuses fully the buyer, while the new element of a business depression, which was held by the jury to be an occurrence beyond the control of the International Paper Co., also assumes importance as a factor in determining the legal responsibility for a party to a contract such as this one.

Incidentally it is of interest to note that the International Paper Co. mills at Livermore Falls, Me., Berlin, N. H., and Wilder, Vt., have been changed to coal burning from oil.

An important change in paper selling agencies is announced in Boston. Stone & Andrew Inc., paper merchants of Pearl St., Boston, who for years have had the sale of the famous Oxford Paper Co. lines in New England, have discontinued them and they will be taken over by Carter Rice & Co. Corp., of Winthrop Square, Boston. The latter concern is the largest paper merchant in New England with representatives in several New England cities, New York, and with subsidiaries in the far West at Denver, Seattle, Portland, and San Francisco. In taking over the Oxford papers the Carter Rice & Co. Corp. has stocked them in full.

Judge Bishop, of the Superior Court, sitting at Pittsfield, Mass., has confirmed the sale of the Mountain Mill Paper Co., of East Lee, manufacturer of waxed specialties to the Mountain Mill Co. The sale is confirmed on the advice of Louis T. Stevenson, receiver. The Mountain Mill Co. is listed as the present assignee, being holder of unsecured claims to the amount of $185,516. The offer of purchase as subject to a mortgage of $40,000 and the assignee agrees to pay the sum of $185,590 in cash or equivalent for the property involved. Meantime this company is going ahead with an important power project addition.

Scarcity of labor continues to be a serious problem with paper manufacturers in northern New England, particularly in regard to their woods help. The Great Northern Paper Co. is advertising for 450 woodcutters at wages of $2.00 per cord at stump and is having much difficulty securing full crews for its various contractors. The French Canadian woodsmen are scarce, a return movement to Canada of these woodsmen having started early in the year.

Salesmen of Carter Rice & Co. Corp., 20 in number, were entertained at Rumford, Me., during the last week of October, at a mill inspection preparatory to their stocking of the Oxford line by the Boston merchants.

An exhibit of Massachusetts products at the Copley-Plaza Hotel at Boston during the last week of October included attractive booths by several Bay State paper manufacturers, among them Crane & Co., Eaton Crane & Pike, George W. Wheelwright Paper Co., Tileston & Hollingsworth & Co., and the American Writing Paper Co. Prizes were awarded for the best exhibits without regard to industry and the two firsts went to Crane & Co. and Tileston & Hollingsworth & Co., two paper makers, incidentally who are this year celebrating their 125th anniversaries.

It is reported in the local trade that a large, new, reinforced concrete warehouse is about to be constructed for the Robert Gair Co. mill at Haverhill, Mass.

Bird & Son, Inc., have awarded to J. Gascoigne & Co., Inc., of Boston, the contract to construct an extension to the storehouse at East Walpole, Mass., for their main mill. Monks & Johnson, of Boston, are the engineers and architects.

The sale of the properties of the American Writing Paper Co. at Windsor Locks, Conn., as required by law, will take place on December 2nd. The sale will be held under the management of S. L. Willson, president, and presumably is a mere matter of form to comply with the legal transfer of assets from the old company to the reorganized American Writing Paper Co., which will then be incorporated under Massachusetts laws to take it over. All creditors, stockholders, and noteholders having assented to the plan, no objection having been publicly voiced, the new year should see the American Writing Paper Co. out of receivership and in a position within a short time to pay dividends on its preferred stock. Mr. Willson stated that on the basis of current earnings this should be possible before very long.

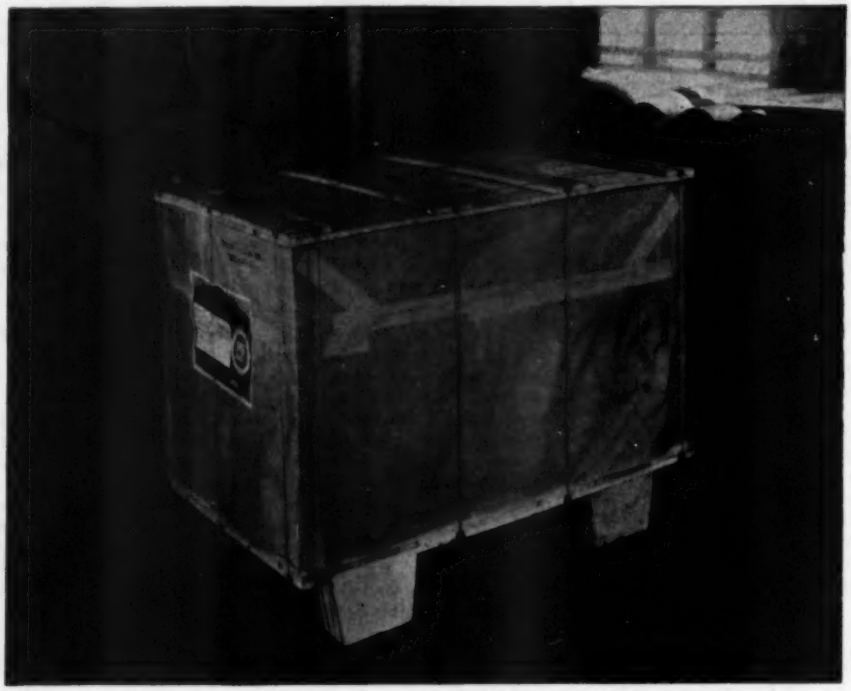
It is reported in the Boston trade that Frank M. Preston, for the past several years connected with the Haverhill mill of the Robert Gair Co., and previous to that with the same corporation's Piermont plant, has retired from business for a time owing to ill health. This report was received with great regret as Mr. Preston as assistant manager at Haverhill acquired many warm friends in this section.

The Boston Paper Trade Association will hold its annual fall meeting at the Exchange Club, Boston, on Wednesday evening, November 17th. The usual dinner will be enjoyed with orchestral music followed by a brief business session. Applications for membership from George J. Cadwell, of the American Writing Paper Co., of Holyoke, proposed by Norman Harrower, Dexter D. Coffin, of C. H. Dexter & Sons, Inc., of Windsor Locks, Conn., proposed by Charles H. Coye and for associate membership by Col. F. L. Thompson, of New York City, will be voted upon. A most entertaining program is scheduled in the form of a fascinating lantern lecture, "England to India by Car," to be given by Major F. A. C. Forbes-Leith, descriptive of a world's record automobile journey made by him across two continents. Norman Harrower, president of the association, will preside.

The appointment of Henry Lindenmeyr & Sons of New York as another agent for the lines of the Champion Coated Paper Co., benefits New England greatly, as a Connecticut office is maintained by the New York merchants, and large New York stocks will be available for emergency shipment here.

A cause of some concern to soda pulp manufacturers of New England is the spread of the satin moth which attacks poplar timber, the prime source of the best soda pulp. A quarantine imposed last year covered a stretch of 50 miles from the coast of Maine to the Connecticut line in Rhode Island. Portions of Connecticut and the area contiguous to Bangor, Me., has been found infested with the moth which defoliates the trees, leaving them prey to the borers.

The heavy exports of coal have made New England coal dealers practically destitute of West Virginia fuel and many tidewater shippers are relying on Pennsylvania bituminous to care for their contract customers. For mills not covered by contract the coal situation in New England is serious because the price of New River and Pocahontas has risen to $11 on



GERRARD
The Tie That Binds

Packing Cost Reduced 75%

The skid illustrated above contains *two tons* of paper tied by the Gerrard Method ready for shipment.

In this instance the Gerrard Method saved more than $15.00 in packing cost alone.

This paper was formerly shipped in lots about 500 pounds in heavy cases costing *$2.50* each, or a cost of *$10.00* per *ton* of *paper*.

Skids of the type shown cost only $3.50 to $5.00, which is so inexpensive that it does not pay to have them returned. Paper manufacturers, who have adopted the Gerrard Method, find their packing cost *reduced* to about *$2.50 per ton*—a *saving of 75%*.

The Gerrard Model "G" Little Giant machine is used in applying 8 gauge wire to paper on skids, stowing cars of roll paper and re-enforcing case paper. It's the busiest machine in every paper mill in which it is installed—an important link in the Gerrard method of packing and shipping paper. Equip your mill with the Gerrard method!

This method of shipping also has many advantages appreciated by printers. There is no cost of unpacking and no paper wasted in unpacking. Many printers do not rehandle their paper at all but simply wheel the skid into place under their automatic press feeders.

The Gerrard Model "G" Little Giant Wire Tying Machine is used for applying 8 gauge wire to paper on skids as well as roll paper.

To ask us how to effect a saving in your present cost of packing incurs no obligation.

GERRARD WIRE TYING MACHINES CO.

1939 South 52nd Avenue :: :: CHICAGO, ILL.

cars at Boston. The Boston & Maine R. R. has undertaken a survey of coal stocks along its lines. Paper traffic men say that car supply is perfectly adequate but for once that factor is unimportant, the obtaining of coal at the mines being very difficult. The B. & M. is prepared to expedite shipment to mills whose stocks are low, and communication should be established with the Shippers Regional Advisory Board in Boston, in such instances.

An instance of good citizenship that would be rather hard to equal is the case of Sydney S. Rogers, Pacific coast representative of Crocker McElwain Co., of Holyoke, who is said to have come all the way from the Coast to Holyoke to vote at the recent election. He was given a rousing reception by the Holyoke Rotary of which he is a member.

Another agency change involves the appointment of the Century Paper Co., of 186 Summer St., Boston, as local agents with John Carter & Co., for the Waterfalls Paper Co., of Mechanic Falls, Me.

It is understood that a third turbo generator has been installed in the plant of the Rumford Falls Power Co. at Rumford, Me., which supplies the Oxford Paper Co. with power. Incidentally, the water power at Rumford is said to be the largest, potentially, in New England with a capacity of 55,000 h.p. There is a drop of 180 feet in the river at this point. The tremendous power resources of Rumford have made the most extensive use of hydroelectric power possible by the Oxford Paper Co. Their conversion of hydroelectric power into heat, a reversal of the usual power production method, is one of the big factors in the recent growth and outstanding success.

The ball team of the Hollingsworth & Vose Co., West Groton Mill won the season championship in the Middlesex County League, from Concord, in the playoff.

Great Northern Paper Co. Builds R. R.

The Great Northern Paper Co. has made another important advance in woods transportation. Finding that their timberland in the Chamberlain Lake territory of northern Maine, was too remote from the West Branch Penobscot watershed to successfully float the logs from the cuttings, a railroad was decided upon. This railroad, about 18 miles in length, will bring logs from Eagle Lake to Chesuncook Lake, whence they can be floated down to the mills through the Great Northern's wonderful chain of dams. The road is practically completed and the log cars will be hauled by an 18-ton gasoline locomotive, which came from the Fate-Root-Heath Co., of Plymouth, O. Piers are being constructed out into Chesuncook Lake.

The road involved some nice engineering stunts, conspicuous among these being an 1800-foot trestle over the Allegash stream. The road taps vast new sources of pulpwood, which can be floated or hauled to the Eagle Lake "head of steel" and railroaded to Chesuncook. Great Northern's northern Maine empire grows yearly. Practically every form of transportation is employed on their great million acre reserve of timberland. They make use of steamers on Moosehead and other lakes, tractors, mules, horses, in the woods, trucks and trailers on their miles of highways constructed and paid for by themselves—and now a railroad.

Latest developments in the paper mill power field indicate that the American Writing Paper Co., have started their new powdered coal power plant at Holyoke. The Cushnoc Paper Co. is making headway in the installation of its new powdered coal power plant, expecting to have it in operation by the middle of December. The International Paper Co. at Livermore Falls has received the new boiler equipment for operating the plant on powdered coal. This mill will probably start installation of this equipment early in January. Installation of the new boiler plant for burning powdered coal at the Brown Co.'s Berlin, N. H., plant, is progressing and will undoubtedly be ready for operation early in January.

Catalogs, Booklets, Etc.

Dodge Manufacturing Company, Mishawaka, Indiana.—Two very interesting and instructive booklets have recently been issued. The one is a complete handbook on Dodge equipment containing exhaustive charts, diagrams and illustrations of power transmitting equipment. Each piece of equipment is covered by a chart or table giving sizes, dimensions, capacities (wherever necessary), etc. This handbook will make a valuable addition to the library of plant superintendents, engineers and others. The other booklet is a handsome piece of work consisting mainly of views taken in the shops of the company illustrating numerous jobs under construction in the shops.

Buffalo Forge Company, Buffalo, N. Y.—Catalog No. 466 covers the Buffalo Unit Heaters. The various types and applications of these heaters are completely described and illustrated with both views of equipment and installation views. A number of dimension diagrams and charts as well as a number of installation floor layouts help to make the presentation complete.

Revolvator Company, Jersey City, N. J.—A new bulletin describes a new model hand power revolvable base lift truck. The bulletin is profusely illustrated with sectional views and views of the truck in use.

Timken Roller Bearing Company, Canton, Ohio.—The new Timken Engineering Journal has been just received. A number of pages are devoted to the explanation of the Timken Bearing as manufactured at the present time. Typical problems, with the solutions, involving the calculation of various loads and the selection of suitable bearings are given. Methods of mounting Timken Bearings, shaft and housing design, adjustment, closures, and a number of other relative subjects are treated in separate chapters. A full set of dimension sheets accurately drawn to scale, together with formulas and recommendations for the applications of these bearings are treated in another section. The book contains a wealth of technical information that will be of great value to automotive and industrial engineers.

Ingersoll-Rand Company, New York City.—An illustrated bulletin describing the Cameron double suction, open impeller centrifugal pumps has recently been issued. There are several photographs of actual installations of Cameron pumps in paper mills. Some of the illustrations are in two colors, the cross sections of pumps in colors making the mechanism and operation of pumps easily understood by readers with a limited engineering knowledge.

The Lincoln Electric Company, Cleveland, Ohio.—Automatic arc welding forms the subject matter of a new bulletin received. The subject matter is presented in a very clear, easily understood manner taking up in turn each type of welder manufactured by this company. Different types of welds are discussed and are illustrated by diagrammatic drawings. Numerous photographs of the machines themselves and of the machines in use help greatly to present the subject.

Metropolitan Life Insurance Company, New York City.—The third of the series on Business Organization which this company is issuing is entitled "Piled Lumber or an Organization." In it organization is defined, the duties and responsibilities of committees are outlined, and the importance of right organization, the difficulties of reorganization, and the interest in correct organization are dealt with. Report No. 92, "The Credit Union in Industrial Establishments," has also been received. It discusses the growth of the credit union, its advantages and rules. It goes into detail on the subject of how loans are made in various establishments, the size of loans and the matter of interest.

H. E. Rockwood, for twenty years superintendent of the Champion Paper Company at Carthage, N. Y., has made a new connection with the Sherman Paper Company and has been placed in charge of the mill at Great Bend, N. Y. Mr. Rockwood carried with him the good wishes of all connected with the Champion mill at Carthage and on leaving, as a testimonial of their esteem, the office staff and men in the mill presented him with a handsome leather suit case and a purse of gold.

THE JOHNSON FRICTION CLUTCH

As Used in Two

Johnson Reverse Gears on

The Merritt Veneer Lathe

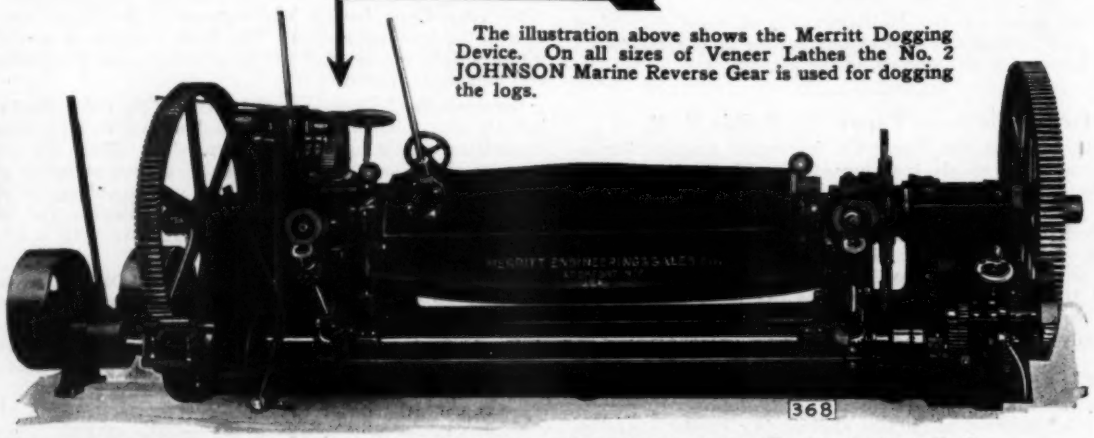
Pattern D, 32-in., Swing, Medium Weight Machine

Johnson Gears Are Used on Forty Sizes of Merritt Lathes.

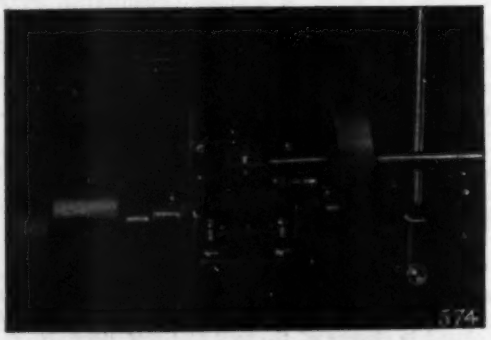
JOHNSON Model "F" Ball-Bearing Reverse Gear

Dogging Device—With No. 2 JOHNSON Gear

The illustration above shows the Merritt Dogging Device. On all sizes of Veneer Lathes the No. 2 JOHNSON Marine Reverse Gear is used for dogging the logs.



COURTESY: Merritt Engineering & Sales Co., Inc., Lockport, N. Y.



Quick Feed Device—With No. 2 JOHNSON Gear

High Grade Reverse Gear

On the Merritt Quick Feed Device (at left) the No. 2 JOHNSON Gear operates the knife carriage forward and backward, out of the way and into place ready for the cutting feed.

Write us your problem. Our illustrated reprints and full data tell all. Equip with JOHNSON Reverse Gears.

Write for Catalog R. I.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

S. A. Staege of Westinghouse, Promoted

Mr. Stephen A. Staege, whose thorough knowledge of the application of electric power to the manufacture of paper has made him a prominent figure in the paper industry, was recently promoted to the position of industrial engineer of the General Engineering Department of the Westinghouse Electric and Manufacturing Company. He had previously held the position of section engineer in charge of the paper mill section.

Mr. Staege's career has been a varied and interesting one, replete with instances that show clearly his continued efforts toward the improvement of the paper mill industry through the application of electrical equipment, and is marked by a steady climb from a meagre start to the position that he now holds as industrial engineer.

The basis for Mr. Staege's important work in the electrical industry was formed in his experiences in telephone and small electric light plant installations back about 1900, and his early experiments and interest in radio, starting about that time and continuing until the present. It was then, through wireless and other electrical experiments and a constant study of all available technical literature, that he got his first insight into the electrical industry, from which he developed through various experiences in building small industrial and power plants, transmission and distribution systems, installation of municipal water works systems, and paper mill electrifications until he entered the employ of the Allis-Chalmers Company as sales engineer, specializing on paper mill electrifications and industrial power plants, both steam and hydro-electric. He continued his paper mill and hydro-electric work, as consulting engineer from 1910 until 1918 when he entered the employ of the Westinghouse Electric and Manufacturing Company, organizing the paper mill section of the General Engineering Department. He remained in this capacity as section engineer until his recent promotion.

The extent of Mr. Staege's influence on the design of paper mill machinery may be best seen in the review of the developments in which he has taken part. Mr. Staege developed the first automatic speed regulator for the electrical sectional paper machine drives, built by the Westinghouse Electric and Manufacturing Company. The development of the latest type rotary contractor speed regulator system for electrical sectional paper machine drive, now used extensively and manufactured by the Westinghouse Company, is another one of the works of Mr. Staege, as well as the development of the first commercial automatic load regulator for electric driven pulp grinders used in this country and Canada. In addition to these developments Mr. Staege was responsible for the system of Dual Frequency Calender Drive now coming into extensive use in the paper industry, as well as other apparatus designed for special requirements and applications.

Mr. Staege's activities have not been entirely confined to design and development work, for he has contributed numerous articles for publication in the technical press, particularly in the paper industry, and has taken an active interest in the work of the Technical Association of the Pulp and Paper Industry of which he is a member and before which society he has presented several papers and in connection with which he is a member of the Light, Heat and Power Committee. He is also a member of the American Society of Mechanical Engineers, a fellow of the American Institute of Electrical Engineers, and an associate of the Institute of Radio Engineers. An important contribution of his to the technical literature on the subject of electrical sectional paper machine drive is a recent paper entitled "Electrification of Paper Making Machines," presented at a meeting of the American Institute of Electrical Engineers held at Cleveland this year.

Power Show Will Have Educational Value

The educational features of the Fifth National Exposition of Power and Mechanical Engineering, which will open at the Grand Central Palace, Lexington avenue and Forty-fifth street, New York, Monday, December 6, are being developed very effectively. This annual event brings together not only the leaders in engineering and industry but a great many of the general public who desire to keep abreast of developments in applied science. Heating and ventilating apparatus will form an important section of the exposition. Upwards of 151 exhibits of all types of equipment for heating and ventilating will present the novel developments that modern industry demands for its present program of increasing the productivity and economy of its factories.

Asks Increased Appropriation for Forest Products Laboratory

Chairman R. S. Kellogg of the American Forestry Program Committee has asked General Lord, director of the budget, to allocate a million dollars a year for the Forest Products Laboratory of the U. S. Forest Service, to enable it to continue and extend its researches into the mechanical and chemical properties, characteristics and behavior of wood under varying conditions of use.

The present budget of the Forest Products Laboratory is approximately $400,000, which is said by the American Forestry Program Committee to be wholly inadequate for scientific research concerning the utilization of the forests, which occupy more land than all of the activities of agriculture. The committee estimates the present annual loss of material in the process of forest utilization as equivalent to approximately $600,000,000. It is believed that by concerted effort of the forest-using industries, the consumers of forest products and adequate scientific research, it is possible now to recover over $300,000,000 of this annually.

Next Meeting of Paperboard Industries Ass'n

The next meeting of the Paperboard Industries Association, which is the annual meeting, will be held November 17 and 18, at the Waldorf-Astoria Hotel, New York City. At this meeting the officers for the ensuing year will be elected, and plans will be outlined for the work for the next twelve months.

On Wednesday, November 17, there will be a meeting of the Folding Box Group in the morning and of the Paperboard Group in the afternoon. The Container Group meeting will be held on Thursday morning, November 18. The general meeting of the three groups will convene at 2:00 p. m. Thursday afternoon. An informal dinner following the business session will be held Thursday evening, November 18. There will be talks by the retiring and incoming officers as well as by some of the members.

Great Southern Lumber Co. Holds Picnic

According to all reports the picnic held Saturday, October 16, at Bogalusa, La., by the allied companies of the Great Southern Lumber Co., among which is the Bogalusa Paper Co., was a decided success. The picnic was held in two sections, the white people at the Country Club, and the colored people at the colored ball park.

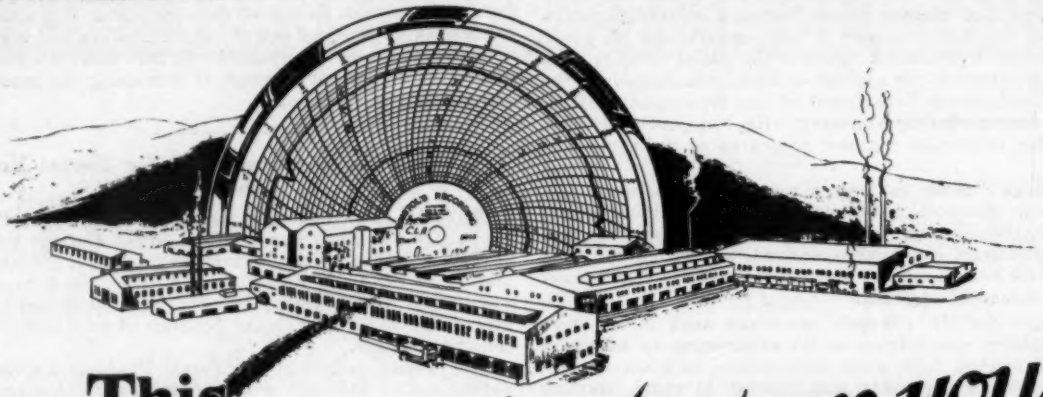
During the afternoon Mrs. Ellen Conger Goodyear, wife of the late C. W. Goodyear, one of the founders of the Great Southern Lumber Co., was seated on a special stand, receiving old acquaintances and making new ones. Mrs. Goodyear and party came from Buffalo especially for the picnic.

Hearst Planning Paper Mill in Alaska

William Randolph Hearst, publisher, is reported to have filed an application with the Federal Power Commission for a preliminary permit to construct a power project in Alaska for the manufacture of paper. The application said Mr. Hearst contemplated a project at Fort Snettisham in the Tongass National Forest and a complete paper and pulp mill.

Several applications for preliminary permits with which the Hearst application is in conflict, are pending. A license issued to the Alaska Pulp & Paper Company in August, 1924, covers a part of the same project.

Complete plans must be submitted to the commission before a license is issued. A preliminary permit gives the applicant priority in the event the commission finds the plans feasible and not harmful to the public interest.



This Winter check up on your Heating and Ventilating System!

It exerts a tremendous bearing on your production costs—either as an economy or burdensome expense. Is your cost for heating and ventilating swallowing up that margin of extra profit that other mills are securing? Now is the time to investigate. Check up. Get the facts. Ask these questions.

1

Is the System Properly Taking Care of Your Mill?

2

Is It Doing the Work at the Minimum Expense?

Put your problem up to our engineers who are specialists devoting their entire time and study to the proper Heating and Ventilating of Paper Mills. No obligation.

Getting proper results is imperative. But getting results at excessive cost is prohibitive. How does *your* equipment measure up?

See page 388 in the 1926 Paper and Pulp Mill Catalog

J. O. ROSS ENGINEERING CORPORATION

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ROSS ENGINEERING OF CANADA, LIMITED

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ROSS SYSTEMS

HEATING—VENTILATING—DRYING

Canadian Section

Montreal, November 1st, 1926.

Canadian Paper Trade Association to Meet in January

The Canadian Paper Trade Association has been in the habit of holding its annual meeting some time in the fall, generally in October. At the annual meeting held in Montreal last fall it was decided that the next gathering would take place in the same city at the time of the annual convention of the Canadian Pulp and Paper Association, in the last week of January.

It is felt that the two associations meeting during the same week will have many advantages and draw a large attendance. Conferences between jobbers and producers can be more conveniently arranged and trade relations and customs talked over without loss of time.

Early Start on Cellulose Building

According to a recent announcement by Secretary Beck of the Canadian Pulp and Paper Association work on the building to be erected by the Association on University street, Montreal, will get under way by the first of the new year.

In order to meet the financial requirements of the construction $350,000 has to be raised. Of the proceeds, $250,000 is to be applied to the construction of the laboratories and $100,000 to an endowment fund to provide permanently for the Association's share in the care and maintenance of the building. Of this amount $300,000 has already been raised and it was voted at a recent meeting of the Executive of the Association to give the special committee additional time to raise the remainder.

Newsprint Prices

International Paper Company has announced its contract price for news print for 1927 at $65 per ton. Canadian producers, while making no formal announcement, are understood to have decided upon similar action. This is quite in line with expectations. Despite new production coming in this year, Canadian mills operated at 99 per cent and United States mills at 95.7 per cent of capacity in September, so that it is not strange to see confidence in the future on the part of the chief producers, reflected in the renewal of the current price for next year.

The decision, of course, takes into consideration new tonnage to be brought in during 1927. Mills in this country have been successful in reducing operating and other expenses to meet the change in prices of the commodity. Even at present $65 per ton seems to give them a comfortable margin of profit and there are distinct possibilities for improvement of the situation through further reduction of operating costs.

Application for Duty on American Magazines

The Magazine Publishers' Association of Canada have presented their case before the Advisory Board on Tariff and Taxation in requesting that a duty be imposed on American magazines entering Canada. All raw material—paper, ink, engraving, art work, etc.—are subject to sales tax and heavy duties (with the exception of newspaper presses which enter Canada duty free) ranging from ten to twenty-five per cent; while on the other hand the United States publisher brings his finished product into Canada free of all duties and import taxes.

Application was made that a duty of 15 cents per pound be imposed on the advertising appearing in United States magazines and periodicals coming into Canada, or, in the alternative, a specific duty of 10 cents per pound on the total weight of all such magazines, periodicals and newspapers entering the Dominion. The application was also supported by the Trades and Labor Congress of Canada, the Ontario and Quebec Typographical Unions, the booksellers and stationers of Canada, the National Council of Women, the Canadian Authors' Association, the Advertising Agencies' Association of Canada, the printing ink manufacturers, and the Book Section of the Canadian Pulp and Paper Association.

At the conclusion of the hearing, Right Honorable George P. Graham, chairman of the Tariff Advisory Board, stated that the duty of the Board was to marshal facts for the Minister of Finance, before whom would be laid all the information obtained by the Board.

Representatives of manufacturers of paraffined paper used in wrapping butter, meat and fish were informed a few days ago by Hon. J. A. Robb, acting Prime Minister, that the Government saw no reason to change the previous decision of the Customs Board, which had refused to grant a higher classification on this class of paper under the customs tariff. The acting premier's statement was made following representations made in camera before a sub-committee of the cabinet. Mr. Robb, however, suggested that the matter might be one for consideration of the Tariff Advisory Board, and it is understood that the manufacturers intend to make a similar application shortly before the Board.

K. S. MacLachlan, manager of Lincoln Pulp and Paper Mills, Merritton, Ont., has been appointed to succeed F. J. Campbell, chairman of the committee composed of representatives of the pulp and paper industry to supervise the work of the institute of Industrial Arts.

Canadian Pulp & Paper Association Convention

It has been decided to hold the annual convention of the Canadian Pulp and Paper Association during the week of January 24th, with meetings of the Technical and Woodlands Sections on Wednesday and Thursday, with the joint luncheon on Thursday and smoking concert Thursday evening, the Association luncheon on Friday, and the President's dinner Friday evening.

The programme committee of the Technical Section has a tentative list of papers and discussions in which the main papers are expected to be entirely the product of members. Others will, of course, be welcome as usual to attend the meetings and take part in the programme. The programme of the Woodlands Section, as it appears at present, will be largely a matter of receiving committee reports and conducting the discussions that will follow.

QUEBEC

Aldred May Control Laurentide

It is reported on what is stated to be "excellent authority" that the financial group controlled by J. E. Aldred has now obtained control of the Laurentide Company, partly by stock transactions on the market, and partly by private transactions, and that at no distant date the Laurentide Power holdings will be segregated from the Laurentide Company and amalgamated with the St. Maurice Power and Quebec Power into a consolidation which will afford very large economies in the matter of interchange of current between the various companies.

Color is given to the statement by further sharp rises in the prices of the stocks of the companies concerned. These prices appear to reflect very extensive buying by news interests, apparently largely American, which have recently come to realize the immense potentialities of the hydro-electric industry in Quebec. It is further stated that the Shawinigan

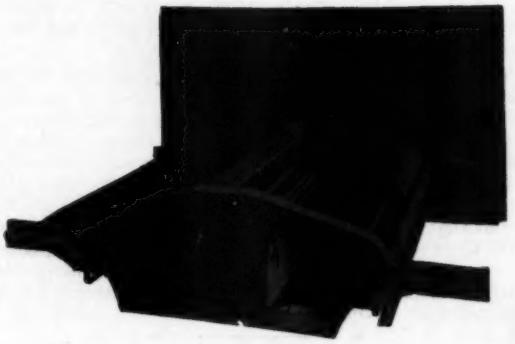
TYPE "E" STOKER

Simple—Efficient—Reliable

The Type "E" Stoker has stood the acid test of hard everyday service in all parts of the world.

It has shown remarkable efficiencies, burning a wide variety of bituminous and other fuels, under all types of boilers.

There are more Type "E" Stokers operating today than there are of any other stoker of this type.



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STOKERS OF ALL TYPES
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A "Solution" for Corrosion Problems

Do you find it difficult to keep your mill equipment and plant structures free from rust? Have you found a paint which will stand up against the moisture, heat and acid fumes encountered in a paper mill?

The solution to this problem is *truly* a solution—a solution both in name and nature. Its name is BITUMASTIC SOLUTION and, in nature, it resembles ordinary paint. But here resemblance stops, for ordinary paint deteriorates under the action of moisture alone while BITUMASTIC SOLUTION is not only impervious to moisture but resistant to high temperature and chemical fumes.

Try BITUMASTIC SOLUTION on the surfaces which cause you the most trouble. You will find these surfaces long outlasting any others you have tried to guard against corrosion by any other means. The solution is shipped in 1 gal. and 5 gal. cans or 30 gal. and 50 gal. drums. Place your order—make the trial—and return any unused portion if it fails to satisfy in all respects.

SINCE BITUMASTIC 1854
REG. U.S. PAT. OFF.

WAILES DOVE-HERMISTON CORPORATION
17 BATTERY PLACE, NEW YORK
322 S. Delaware Ave., Philadelphia Union Trust Building, Cleveland
Matson Building, San Francisco
In Canada—Lytle Engineering Co., Montreal
Agents in principal cities

Water and Power Co. are likely to take over the Carillon power site near Montreal, where the development of some 250,000 horsepower is possible. Premier Taschereau is stated to have confirmed the fact that the Quebec Government has been kept informed of negotiations to this end.

Joint Logging by Ontario Paper and Anglo-Canadian

On his return from a business trip to New York early last month, President Frank W. Clarke, of the Anglo-Canadian Pulp and Paper Mills, announced that an agreement has been concluded between his company and the Ontario Paper Company whereby they will jointly develop their pulpwood limits in the watershed of the Manicouagan River.

To this end, a new company has been formed under the title of the Quebec Logging Corporation, which is controlled jointly by the two companies. The directorate of the new company is as follows: President, F. W. Clarke; Vice-President, Arthur A. Schmon; Directors, Colonel Robert McCormick, J. D. Gilmour, R. A. McInnis and Warren Curtis, Jr.

The pulpwood will be treated in mills which are being erected by the Anglo-Canadian Pulp and Paper Mills, at Limoilou, a suburb of Quebec City, and which will shortly be constructed by the Ontario Paper Co. near Outarde Falls.

George Cullett, superintendent of the Brompton Pulp and Paper Co., East Angus, died recently as a result of injuries received two days previously when the car in which he was driving plunged into the ditch of the Sherbrooke-East Angus highway about two miles from Cookshire.

Price Brothers Sue for $400,000

Evidence in an action for $400,000 damages brought by Price Brothers and Co. against C. E. Heath, one of the members of the insurance firm of Lloyd's, was heard in Quebec last month. The actual trial of the action is taking place in London, but, by means of a rogatory commission, some of the evidence in the suit was given in Quebec.

Price Brothers in 1914 took out a policy from the defendant Heath for protection of some of their Saguenay timber limits. This policy was renewed in 1915. In the latter year, fire destroyed sixty-four square miles of the company's limits. The defendant refused to pay for the fire loss, estimated at $400,000, and the present suit is the result of this refusal. It is expected that about forty expert witnesses will be heard in the case.

Awards of Sir William Price Bursaries Announced

The awards of the bursaries given to Laval University, Quebec, by Sir William Price have been announced. These bursaries were given by Sir William for the encouragement of study in the Department of Science. The amounts are $100 for the pupil going from the first year to the second; $200 for the student going from second to third, and $300 for the student going from third to fourth year, all of whom have gained the highest place in their respective examinations, and provided they have received at least 70 per cent of the marks allowed for their subjects.

This year the bursaries have been awarded to three old students of Lévis College: Armand Roberge, 4th year; Louis Cloutier, 3rd year, and Charles Béland, 2nd year.

Montreal is being made the terminus of the Anticosti Shipping Co., and large quantities of supplies are being shipped down the St. Lawrence for the Anticosti Corporation, which is developing the island with a view to providing pulpwood for a number of large paper mills in the eastern part of Canada. There are now over one thousand men employed on the Island of Anticosti, and the work will be carried on throughout the winter.

The Quebec Power Co., which is at present distributing power for the Shawinigan Water and Power Co. in all the eastern section of Quebec, will, it is understood, shortly sign some important contracts with pulp and paper concerns. Two of the latter are the Anglo-Canadian Pulp and Paper Company and the St. Regis Paper Company, who are to erect mills respectively at Limoilou and Cap Rouge.

The Riverside Pulp Co., Montreal, with authorized capital of $100,000, was recently incorporated at Quebec.

In view of the projected construction of a 200-ton news mill at Mistassini by the Walberg interests, legislation will be presented at the next session of the Legislature in connection with the construction of a railway line from the present terminal of the Canadian National Railways in Lake St. John to Mistassini.

Geo. Wm. Mitchell, 64 years of age, for many years a buyer for the Hydraulic Machinery Co., Montreal, died recently in his home in Outremont, from syncope.

The Pacific Coast Co., Ltd., has installed a pressure-creosoted, continuous wood stave pipe, 36 inches in diameter and two and a half miles long, for the mill water supply of the Port Alfred Pulp and Paper Corporation's mills at Port Alfred. This pipe line runs down to a maximum head of about 130 feet. They also furnished the same corporation some time ago with a 36-inch pressure-creosoted mill sewer pipe, together with wood-stave vomit stack.

Quebec Mills to Observe Lord's Day Act

The Quebec pulp and paper mills held a meeting in Montreal at the beginning of October to consider the communication received from the Hon. L. A. Taschereau, Prime Minister of the Province, calling upon the mills for a strict observance of the Lord's Day Act. The meeting took the view that, while compliance with the request of the prime minister will involve a great deal of inconvenience and some loss to the manufacturers, and while extremely doubtful of the practicability of the arrangement proposed, they nevertheless would give the arrangement a trial.

They have notified their employees that the new schedule, which requires the mills to close from midnight Saturday to midnight Sunday, would be put into effect on the first day of November. It is understood that the bulk of the employees are very much opposed to the proposed new schedule of hours, and that they are making strong protests to the provincial authorities against having it put into effect.

Arrangements have been completed between an aerial survey company and the Duke-Price Company by which the district surrounding the Duke-Price development works at the Grande Décharge and at Chute à Caron will be mapped from the air next summer. While it is the special intention of the company correctly to ascertain the topography of the country, it has also in view the object of finding out exactly what damage might be done to parishes situated along Lake St. John by further development work being executed.

George R. Gammie, formerly with the Valley Paper Co., of Holyoke, Mass., has accepted the position of assistant superintendent of the St. Jérôme mill of the Rolland Paper Co. During the latter part of the life of the late T. W. Hitt, Mr. Gammie was his assistant in the Agawam Division of the American Writing Paper Co., and later he had charge of one department of the Lee Paper Co., of Vicksburg, Mich.

Van de Carr to Manage Beaupré Mill

C. R. Van de Carr has resigned his position as paper mill superintendent of the Laurentide Company to accept that of manager of the Ste. Anne Paper Co.

Mr. Van de Carr comes from a paper-making family. After graduation from the Rensselaer Polytechnic Institute with the degree of Civil Engineer, he was for five years with the Van de Carr Paper Co., at Stockport, N. Y. He then entered the employ of the Laurentide Company, at Grand'Mère and rose to the position of superintendent of the paper department. Mr. Van de Carr has always taken a keen interest in the work of the Technical Section.

Captain Auguste Gourdault, who has been in the service

RYTHER AND PRINGLE COMPANY
CARTHAGE N.Y.

PULP

Dry Sheets or Rolls

REDUCED IN THE

RYTHER SHREDDER

Is Torn into

SMALL RAGGED PARTICLES
THOROUGHLY DAMPENED

and Ready for

BEATING OR SLUSHING

LET US DEMONSTRATE

FOR CANADA REFER

CANADIAN INGERSOLL-RAND COMPANY, LIMITED
260 ST. JAMES STREET, MONTREAL

of Price Bros. for the last thirty-five years, while in command of the little two-masted schooner "Arthur," which was on its way from Matane to Quebec with a cargo of timber, turned off his course to rescue five survivors of the crew of sixteen of the steamer "Guide." The achievement of Captain Gourdault and his crew of two was effected in the face of considerable difficulties and was warmly praised by the survivors.

Pulp Mill Projected at Terrebonne

An application was recently received by the Hydro-Electric Power Commission of the provincial government for permission to harness the Rivière des Mille Iles, the river almost parallel with the Ottawa River to the north of the Island of Montreal. Should the permit be granted a pulp mill would be established at Terrebonne.

There is difficulty, however, in the project, arising from the fact that to provide the necessary flow of water, the channel would have to be bridged, or four controlling dams erected at the four outlets of the Lake of Two Mountains. These dams would be constructed at Laprairie River, Thousand Island River, and the two outlets north and south of Ile Perrot, into Lake St. Louis.

Already permission has been granted for the development of the Laprairie River, and the controlling means will have to be so constructed that these rights are not interfered with. Should the Rivière des Mille Iles project mature, it will mean the development of about 16,000 horse power, and the expenditure of several million dollars.

In response to the public offering recently made in London, England, of $2,000,000 Port Alfred Pulp and Paper Corp., 7 per cent, cumulative, redeemable, preferred shares at 98½, immediate subscriptions totaled $1,200,000. The balance was in strong hands, the entire issue having been underwritten. The result was considered very satisfactory.

Over one hundred delegates who had been in attendance at the fifteenth annual convention of the Investment Bankers' Association of America, held in Quebec, made a tour of the St. Lawrence Valley and surrounding territory before returning home. The delegates, who had come from all parts of the United States and Canada, inspected the International paper plant at Three-Rivers, the Laurentide power and paper plants at Grand'Mère, the plants of the Shawinigan Water and Power Company, Canada Carbide Company and Aluminum Company at Shawinigan, and the St. Maurice power plant at La Gabelle.

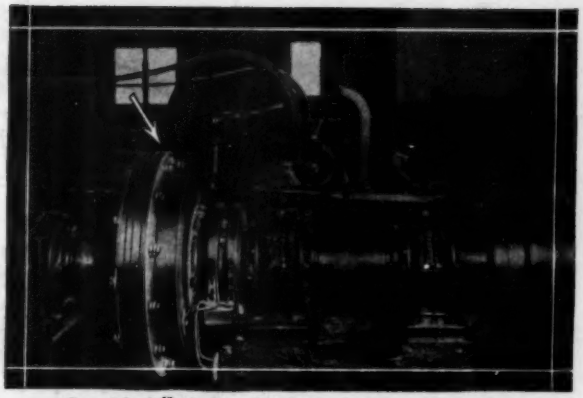
Port Alfred Places Large Barking Drum Contract

William Hamilton, Limited, of Peterboro, Ont., have been awarded a large contract by the Port Alfred Pulp and Paper Corporation for nine barking drums, each with a capacity of from 250 to 300 cords per day, or a total capacity of about 2,500 cords per day for the entire equipment.

The drums are each 12 feet in diameter by 45 feet in length, and, with the driving mechanism will weigh in the neighborhood of 200,000 pounds, or nearly 2,000,000 pounds for the nine machines.

Preparations are proceeding satisfactorily with a view to doubling the capacity of the Riverbend mill of Price Bros. by increasing the ground wood and sulphite mills and installing two more paper machines. It is expected that the latter will be ready to operate early in 1928. The first two machines, which were started up about a year ago, are running very close to their rated capacity, while the Kenogami mill is turning out well over 500 tons daily.

Action of the directorate of Wayagamack Pulp and Paper Co. has justified recent expectations as to a split up of the company's capital stock. The company has given formal notice that upon surrender of their common share certificates on December 1st, next, shareholders will receive two shares of nominal or no par value for each $100 par value share held at present. There being outstanding $5,000,000 or 50,000 shares of capital stock, the company will have 100,000 shares outstanding when this exchange is made effective.



One of the C-H Magnetic Clutches on the paper machine drives at the mill of the Frank Smith Paper Co., Middleton, Ohio.

Any mill hand can run it

MANY a good mill hand knows a lot about paper making—but not necessarily about motors. Knowing motors is a trade in itself and you don't expect it of mill hands.

But the starting and stopping of paper mill drives can be handled expertly by the most inexperienced man in the mill, if Cutler-Hammer Magnetic Clutches are installed. Simply a touch to a push-button and the motor picks up its load evenly and smoothly.

These clutches insure proper control of costly equipment regardless of the inexperience or negligence of the operator, when installed on your drives.

The CUTLER-HAMMER Mfg. Co.
Pioneer Manufacturers of Electric Control Apparatus
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A copy for you!

The reasons for the smooth starting and power economy obtained with C-H Magnetic Clutches are given in C-H Publication P-11. Every paper mill executive should read it. Write for it today.

C-H Magnetic Clutches are engaged and disengaged from conveniently located push-button stations.

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DON'T BLAME YOUR WINDERMAN—

——if the rolls of paper come from your winder poorly cut and with soft centers. The chances are that he has been struggling along with an obsolete type of machinery in a futile attempt to produce firm, even, clean cut rolls.

Your problem and his can at the same time be remedied by the installation of a CAMACHINE, the up-to-date and reliable slitting and roll-winding machine.

We will welcome any inquiries and be pleased to send you illustrated bulletins on a CAMACHINE to meet your needs. Just drop us a line.

PRESSURE SLITTING **CAMACHINE** PRESSURE WINDING

ROLL PRODUCTION MACHINES

CAMERON MACHINE COMPANY
61 Poplar Street, Brooklyn, NewYork, U.S.A.

On October 23rd, Mr. George Millen, president of the E. B. Eddy Co., celebrated his 88th birthday in the usual manner by attending to the manifold interests of the large industry of which he is chief executive. During the day the employees of his company followed their usual custom and presented him with a bouquet of roses, one for each year of his life. Mr. Millen has been with the Eddy Company for sixty years. Mr. Millen stated recently that rumors to the effect that the Eddy Company had been sold to the International Paper were absolutely unfounded. Neither were negotiations for the alleged sale pending. Victor Drury, of Montreal, has become a director of the company, succeeding S. S. Cushman who has resigned from the board.

Chelsea Power Soon Available

Power will be available from at least one unit at the hydro-electric development of International Paper at Chelsea by January 1st, 1927, and from at least one unit at the Farmer's Rapids development of the same company by March 1st, 1927. According to Major James H. Brace, vice-president of the Fraser-Brace Engineering Co., which is carrying on the construction work, the remaining four units, each of 34,000 h. p., at Chelsea will be put into operation as fast as water can be procured to run them. Prior to the completion of the storage reservoir, he stated, there would not likely be enough water to run more than two of these units this winter.

At Farmer's Rapids, Major Brace said, the remaining four units would be rushed to completion shortly after the start of the first one on March 1st. Each unit at this plant is of 24,000 horse-power.

Another 22,000 h. p. of hydro-electric energy was added recently to the resources of the Shawinigan Water and Power Co., which supplies most of the pulp and paper mills in the St. Maurice Valley with electric power. The new development is at St. Narcisse, on the Batiscan River, and the construction called for the exercise of considerable engineering skill and ingenuity and contains many unique features.

Dr. Rudolph Lorenz, who recently came to Canada to join the research staff of the Riordon Pulp Corporation at Hawkesbury, has returned to Germany on account of poor health.

J. H. Biermans, formerly president and general manager of the Belgo-Canadian Paper Co., of Shawinigan, will shortly return to Belgium where he will reside. In recognition of his share in the development of Shawinigan Falls, the employees of the pulp and paper mills and the citizens of the town presented him with an oil painting of himself, by the well-known Canadian artist, Georges Delfosse.

Universal Wood Products, Ltd., Montreal, was organized recently with a capital stock of 1,000 shares of 8 per cent cumulative preferred stock, par value $100, and 100 shares of no par value. The company will manufacture groundwood pulp, sulphite pulp, paper cardboard and other similar materials. Harry R. Langslow, Montreal, is one of the incorporators.

ONTARIO

Killam Buys Mattagami Assets

In September of this year, G. T. Clarkson, trustee in bankruptcy of the Mattagami Pulp and Paper Co. applied for a court order postponing the sale of the company's assets, which had been fixed for October 11. He submitted that conditions had materially changed in the last six months, and he objected to debenture stock being used in the purchase price. I. W. Killam, he said, held $2,450,800 worth of debenture stock out of a total stock of $3,900,000, a good portion of which had been bought for 38 and 40 cents. The Royal Securities Co., which is controlled by Mr. Killam, also held about $946,000 first mortgage bonds. It was contended that Mr. Killam was not entitled to rank as a creditor other than for what the stock had actually cost him.

Smallest amount of scrap in 5 years!

FOR cleaning felts, cylinders, dandy rolls, Fourdrinier wires, screen plates and sieve cloths, nothing can compare with OAKITE materials.

In one instance, where OAKITE materials were used for reconditioning felts and cleaning wires, the work was done so well that every last bit of dirt, oil, and pitch was removed *thoroughly*. As a result the amount of scrap was the smallest obtained in over 5 years.

Other benefits, also, come with OAKITE methods. Cleaning is faster. Rinsing is easier. Handling is simplified. Less labor is needed. Cleaning costs are reduced.

Have one of our OAKITE service men show you how to get these economies. No obligation.

Oakite Service Men, cleaning specialists, are located at

Albany, Allentown, Pa., *Atlanta, Ga., Baltimore, *Boston, Bridgeport, *Brooklyn, Buffalo, Camden, Charlotte, N. C., *Chicago, *Cincinnati, *Cleveland, *Columbus, O., *Dallas, *Davenport, *Dayton, *Denver, *Des Moines, *Detroit, Erie, Flint, Mich., Fresno, Cal., *Grand Rapids, Harrisburg, Hartford, *Indianapolis, Jacksonville, Fla., *Kansas City, Los Angeles, Louisville, Ky., *Milwaukee, *Minneapolis, *Montreal, Newark, Newburgh, N. Y., New Haven, *New York, *Oakland, Cal., *Omaha, Neb., Philadelphia, *Pittsburgh, Portland, Me., *Portland, Ore., Providence, Reading, *Rochester, Rockford, Rock Island, *San Francisco, *Seattle, *St. Louis, South Bend, Ind., Springfield, Ill., Syracuse, *Toledo, *Toronto, *Tulsa, Okla., Utica, *Vancouver, B. C., Williamsport, Pa., Worcester.

*Stocks of Oakite Materials are carried in these cities.

OAKITE

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Industrial Cleaning Materials and Methods

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When Nature Put Her Writing In the Rocks

BACK in the days when the earth was young, the only messages were those of terror and hate and the warning of approaching dangers. Plodding the vast miasmal swamps were gigantic lizards fifty feet long, enormous bats with a wing-spread of ten feet or more, crawling things possessing the size and gait of a war tank, and ferns that grew to tree-like dimensions.

All these have passed away. The gigantic bats have left their forms impressed in aging layers of slate; the dinosaurs are remembered only by their footprints in the Jurassic rocks, a few ten-million-year old eggs in the dry storage of the Gobi desert, and some fossil bones that impress the beholder with astonishment at nature's versatile powers; while the fern "trees" bequeathed us a heritage of coal.

Today men harness the forces of climate and growth that put the gigantic forms of an earlier creation out of existence.

Nature's writing is a product of accident and of ages—man's, of will and paper.

Hammermill Paper Company

Erie, Pennsylvania

Mr. Justice Rose dismissed the application, and an appeal to a divisional court was filed. This, however, did not stop the sale, which took place as scheduled on October 11, and at which I. W. Killam bought the Mattagami assets at a price of $7,250,000.

The master of the Supreme Court of Ontario has granted an application made by counsel for the trustee in bankruptcy for the appointment of a commisison to take the evidence of E. B. Shrove and Sherwood Aldrich, of New York. Messrs. Shrove and Aldrich owned more than one-third of the preferred stock of the Mattagami Company, and it is proposed to find out definitely whether they gave their consent to the issue of mortgage bonds amounting to more than $2,000,000, as required by the charter of the Mattagami company.

In connection with its most efficient "Safety First" campaign, the pulp and paper industry has for some time past been emphasizing the importance of First Aid in the prevention of serious injury due to infection or other causes. A policy making First Aid one of the principal features is being carried on in the mills and recently was introduced into woods operations. At the suggestion of president R. A. McInnis, of the Ontario Pulp and Paper Makers' Safety Association, this policy is being supplemented by the inauguration of a First Aid Contest, and Mr. McInnis is putting up a trophy for competition.

T. Linsey Crossley, president of the Industrial Laboratories, Limited, whose interest in educational matters in the industry is well known, has been appointed by the University of Toronto as Special Lecturer in Pulp and Paper in the Department of Chemical Engineering, Faculty of Applied Science.

Tony Spevchouk, Ukrainian, was electrocuted recently in the yard of the Ontario Paper Mills, at Thorold.

Ontario Pulpwood Sales

K. C. Shaw was the successful tenderer for what are known as the Hogarth limits near Mack on the line of the Sioux Lookout branch of the Canadian National Railways. The limits consist of 18 square miles estimated to contain between 40,000 and 50,000 cords of pulpwood, as well as a certain quantity of jackpine. Mr. Shaw started working at once establishing his camps. The whole of the cut will be disposed of to local mills at the head of the lakes.

The Beaver Wood Fibre Co., Ltd., of Thorold, secured the cutting concessions for nearly the whole of the township of Ottawa and Duff, an area of 70 square miles. They deposited with the Department of Lands of Forests at Toronto a marked cheque for $25,000, and will pay $9 per thousand for spruce and balsam logs, $1.50 per cord for balsam pulp, $2.26 per cord for spruce pulp and 60 cents per cord for other pulp.

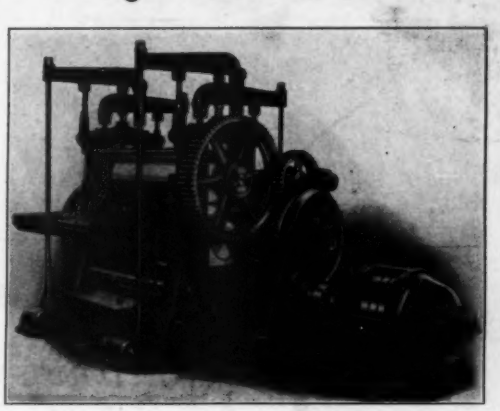
Another sale was made to the Hawke Lumber Co., of Cochrane. It involved 60 square miles of timber in the south and northwest portion of the Township of Marven, in the Cochrane district.

The Newago Co., of Port Arthur, which is the woods operating organization of the Thunder Bay Paper Co., and of the Wisconsin Pulp and Paper Co., whose interests are consolidated, is taking out wood at Hale on the Algoma Central Railway this season. The Newago Co. has 350,000 acres of Algoma Central Railway land upon which to operate, and, in addition, will purchase pulpwood whenever available. The camps are now under construction and 300 men will be employed in the bush. It is expected about 30,000 cords will be cut and will be divided between the American and Canadian mills.

S. F. Duncan, secretary-treasurer of the Provincial Paper Mills, and Mrs. Duncan, have returned to Toronto after a trip to Europe on a visit to their son, who is studying in Paris.

The Lincoln Pulp and Paper Co., of Merritton, have just perfected and patented a private watermarked glassine that

You Can Depend on
NORWOOD
EQUIPMENT



Norwood Platers

NORWOOD Improved Platers are built to stand up. Driven by reversible motor. Flexible coupling on driving shaft. All gears machine cut. Dial type indicator. Top and bottom boxes, extra heavy, made of steel. Babbitted with genuine babbitt. Operated with extreme simplicity by hand switch instead of lever.

Norwood Filters

THE Norwood three-unit system of filtration makes continuous operation possible. There are many special features, such as the patented separate air wash system and strainer system, and all pipes and connections are made of cast iron.

Ask us to send catalogs and specifications on

FILTERS
PLATERS
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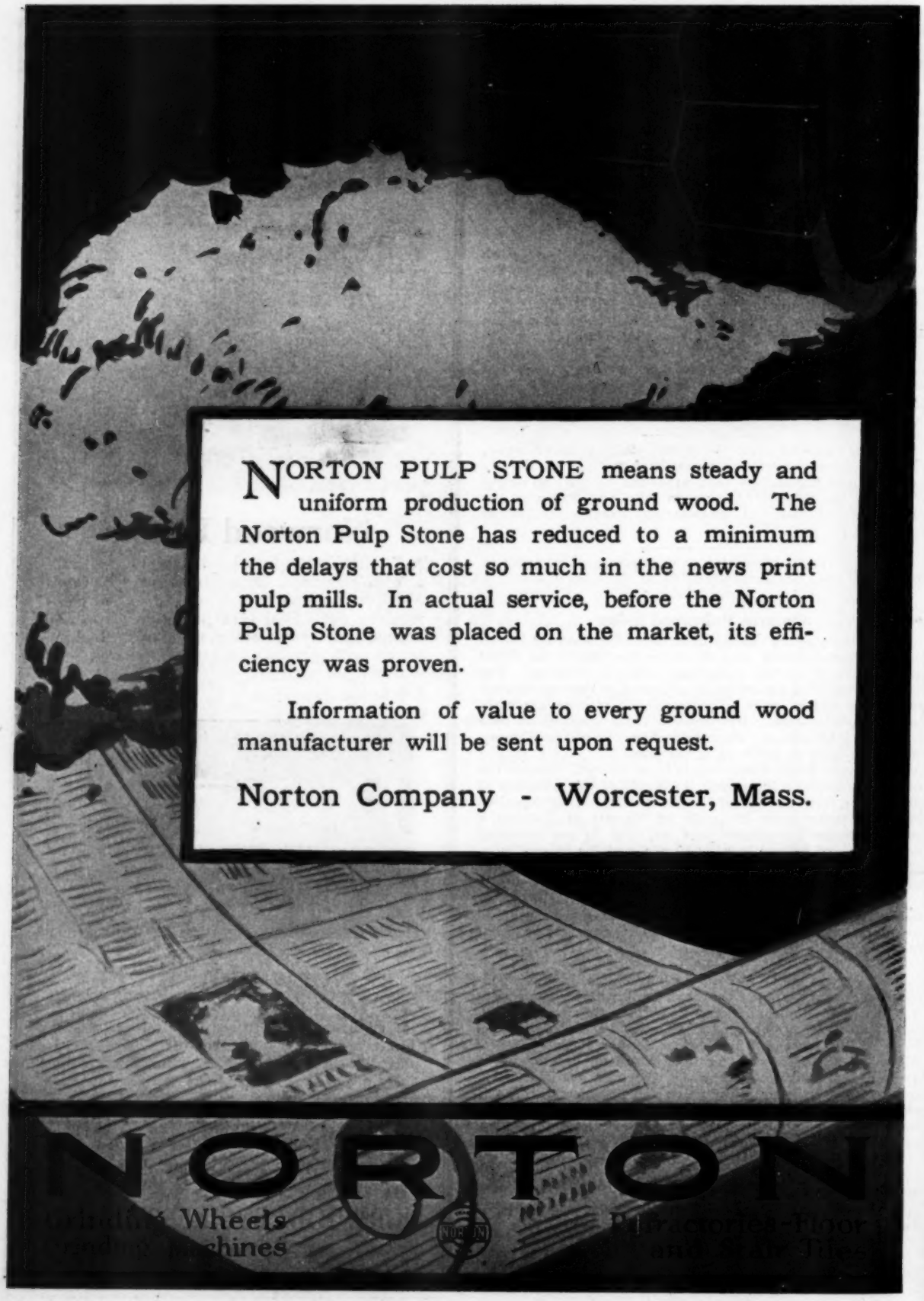
BRUSHING ENGINES

NORWOOD ENGINEERING CO.
Florence, Mass.


NORTON PULP STONE means steady and uniform production of ground wood. The Norton Pulp Stone has reduced to a minimum the delays that cost so much in the news print pulp mills. In actual service, before the Norton Pulp Stone was placed on the market, its efficiency was proven.
Information of value to every ground wood manufacturer will be sent upon request.
Norton Company - Worcester, Mass.
NORTON
Wheels

promises to promote considerably the sale of that class of paper. It is designed as a safety wrapper for packages, particularly bottles, and precludes the possibility of refilling the package with goods other than those made by the firm using the specially watermarked glassine. The paper contains the private watermark of the firm, is transparent, showing the label, is put on the bottle or package wet, and when dry makes a skin-tight wrapper that cannot be tampered with. The bottle is practically sealed, and the covering cannot be replaced except at the plant where the goods were packed.

Port Arthur Shipbuilding Well Booked

Port Arthur Shipbuilding Co., Ltd., is now working night and day with a force of nearly 300 men. They are building 20 grinders for the Fort Frances Pulp and Paper Co.; 6 grinders for the Thunder Bay Paper Co.; wet machines for the Thunder Bay Paper Co. and for the A. P. W. Pulp and Power Co., of Nova Scotia; beaters for the Fort Frances, Thunder Bay, Provincial, and Hinde & Dauch mills; jordans for the St. Maurice Valley Corporation; sulphur burners and bellmer bleachers for the Manitoba Paper Co., and five Moore & White paper screens for Fort Frances.

These screens will be the initial installation of Moore & White screens in Canada, and it is expected that a large number of these will be built after the first installation is complete.

They are also building a large number of Hytor pumps and they have in the shops some unusually large rolls, the largest being 36 inches in diameter and with a 336-inch face. These rolls are believed to be among the largest, if not the largest, ever made in Canada, and are for the new looms of the Niagara Wire Weaving Co. The rolls so far ordered for this purpose now total well over thirty in number, and inquiries for many more have been received from other companies.

A number of shipments in the past few weeks have included deckers, hydraulic pressing equipment, pumps, etc. The boiler shop is also very busy building eight 14-foot rotary globe boilers for the Hinde & Dauch strawboard mill at Trenton.

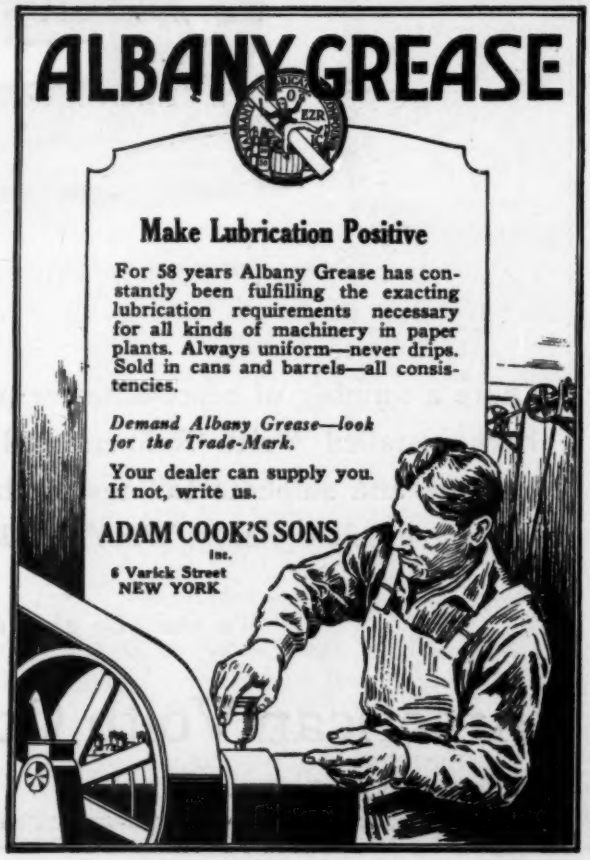
Lumber workers in the Fort William and Port Arthur district have gone on strike to enforce the following demands: pulpwood, 4-foot, $3; 8-foot, $5; fuel cord wood, $2.75; railway ties, 18 cents; fence posts, 10 cents; logs, 15 cents; monthly wages for day laborers, $60 and board; working hours to be eight. They have organized into two unions which have appointed a joint committee and are picketing all railway stations and pulpwood and lumbering camps in the district. About 900 workers, all but twenty-five of which are single men, are affected, and a large number of them already have left Fort William to find work elsewhere.

Cameron and Fraser, wholesale paper merchants of Toronto, have completed the installation of a plant for the manufacture of egg carriers from pulp, for which there is a very heavy demand.

Canadian Cellulose Co., Ltd., a subsidiary of Howard Smith Paper Mills, which is building a very up-to-date soda pulp mill at Cornwall, has ordered a Kamyr Drying Machine, which will be the first machine of its kind to be installed on this continent. By the use of this machine, the steam consumption is brought down to a minimum by very simple means, no felts are used, and less floor space is required when this machine is used than with any other similar machine.

At Iroquois Falls

R. W. Hovey, who for the past six years has been in charge of the service division and was recently appointed president of the Abitibi Research Corporation, has resigned to assume the management of the Nashwaak Pulp and Paper Co., of St. John, N. B. Dr. John Campbell has been appointed to succeed him, and will have charge of all the research work in connection with the company, which will be carried on as a division of the mill department. Dr. Campbell, who went to Iroquois Falls in May, 1923, is a graduate of Glasgow University, the Royal Technical College and the Massachu-


ALBANY GREASE
Make Lubrication Positive
For 58 years Albany Grease has constantly been fulfilling the exacting lubrication requirements necessary for all kinds of machinery in paper plants. Always uniform—never drips. Sold in cans and barrels—all consistencies.
Demand Albany Grease—look for the Trade-Mark.
Your dealer can supply you. If not, write us.
ADAM COOK'S SONS
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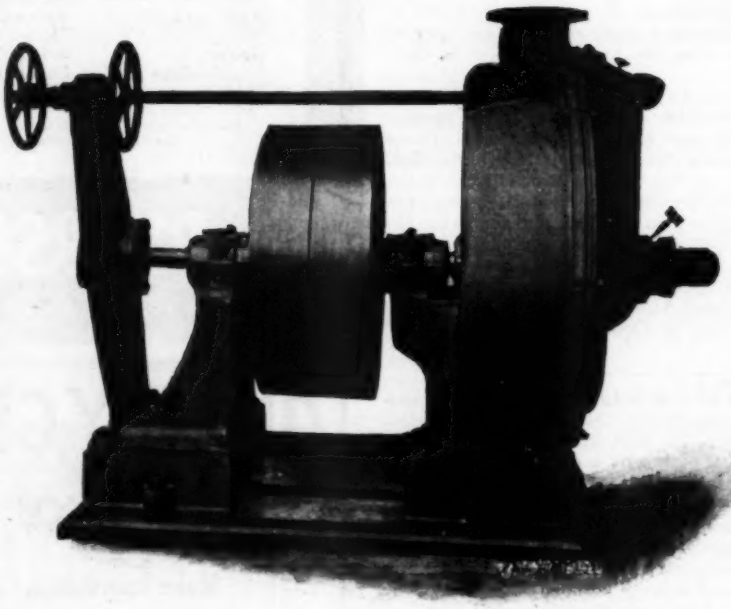
6 Varick Street
NEW YORK

One sure way to eliminate waste in your pulp mill

Install a Voith *Refiner!*



Quite a number of representative pulp mills in this country and Canada have installed Voith Refiners and by working up their ground wood, sulphite and sulphate tailings in them are obtaining from their wood the highest possible yield. WHY NOT YOU?

We shall be glad to furnish particulars

American Voith Contact Company, Inc.

280 Madison Ave. New York

setts Institute of Technology. Previous to going to Iroquois Falls he was two years with the Johns-Manville Company, Nashua, N. H.

L. R. Wilson and Alexander Smith spent a couple of weeks at the Falls last month inaugurating the staff reorganizations necessitated by the departure of R. A. McInnis, mill manager, to become general manager of the Anglo-Canadian Paper Company, and of R. W. Hovey, director of research, to become manager of the Nashwaak Pulp and Paper Company.

A number of the officials of the New York Times and of the Kimberly-Clark Company, of Neenah, Wis., recently visited Iroquois Falls and were shown through the mill and town by J. E. Patterson, F. H. Anson, Jr., and H. J. Buncke.

The gears on No. 4 paper machine were changed last month with a view to increasing the speed of the machine. This required changing gears on all seven sections of the machine, the wire, the three presses, two sections of dryers, and the calender stack. The work was done during the regular Sunday shutdown, and was accomplished so quickly that the machine was able to start up at the usual time on Monday morning and no time was lost. No. 3 machine will be the next to be changed over.

The pulp department of the Northern Ontario Light and Power Co. has taken out membership in the Canadian Manufacturers' Association. The department was organized in January, 1922, for the production and sale of groundwood. They have a mill containing two magazine grinders and seven wet machines, with a capacity of 42 tons per day, located on Lake Temiskaming, midway between Haileybury and New Liskeard.

Many friends in the paper trade will regret to learn of the death of Norman J. Ratcliff, secretary of the Ratcliff Paper Company, Toronto, who passed away on October 6 after several weeks' illness, in his sixty-first year. Mr. Ratcliff, who was a cousin of Frederick L. Ratcliff, president of the company, had spent his whole life in the paper industry.

J. B. Wilkinson, of the Howard Smith Paper Mills, whose new soda pulp mill is being erected at Cornwall, has been visiting Renfrew, Barrys Bay, Killaloe, Maynooth, and other places in Ontario, buying large quantities of poplar pulpwood from the farmers who have always sold to United States buyers but are now disposing of their product to the Canadian mill. It is understood that the Howard Smith company will purchase all the poplar wood in Ontario that they can get, while farmers are pleased at the quicker returns on their shipments.

Jens Thue, superintendent of the Hawkesbury sulphite mill of the Riordon Pulp Corporation, has returned from a visit to Scandinavia. Mr. Thue had not been home for a number of years and was there during the recent strike, so that there were not many mills to be observed in operation. He stated that a person does not now have to go to Europe to see the latest in pulp mill practice: Canada can show the best there is.

A. P. Costigane, secretary-engineer of the Ontario Pulp and Paper Makers' Safety Association, recently visited the Mille Roches mill of the Provincial Paper Mills and the Cornwall division of the Howard Smith Paper Mills. At Mille Roches, he congratulated the employees and management on the perfect accident record made during the past four months. At Cornwall special attention was given to investigating the company's system of handling pulpwood from the holds of vessels to the wood pile conveyor. Everything was found satisfactory, and the new type of wire rope sling now in use has practically eliminated accidents during unloading.

Encouraging Consumption of Canadian-Made Paper

Good use is being made by Ontario firms of the books of stamps, or stickers, sent out by the Canadian Pulp and Paper Association bearing the words: "A condition of this order is that it must be printed on paper made in Canada." On the cover of the book of stickers, the printed matter points out that Canada imports approximately $10,000,000 worth of

Starch

ECONOMY can never be mistaken for cheapness. In the matter of sizing material, starch is cheaper than an all-glue size, yet the results are identical—in fact, the paper made with starch sizing is stronger.

FOX HEAD NIAGARA SPECIAL PAPER

Our experts can show you how these starches can be used advantageously in your mill. They will gladly call on request.

Corn Products Refining Company
17 Battery Place New York

Starch

1864 1926

"Excelsior" Felts

For EVERY GRADE of PULP & PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made *the first endless paper machine felts manufactured in America.*

Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

KNOX WOOLEN COMPANY
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Sold by
BULKLEY, DUNTON & COMPANY
75-77 Duane Street, N. Y.
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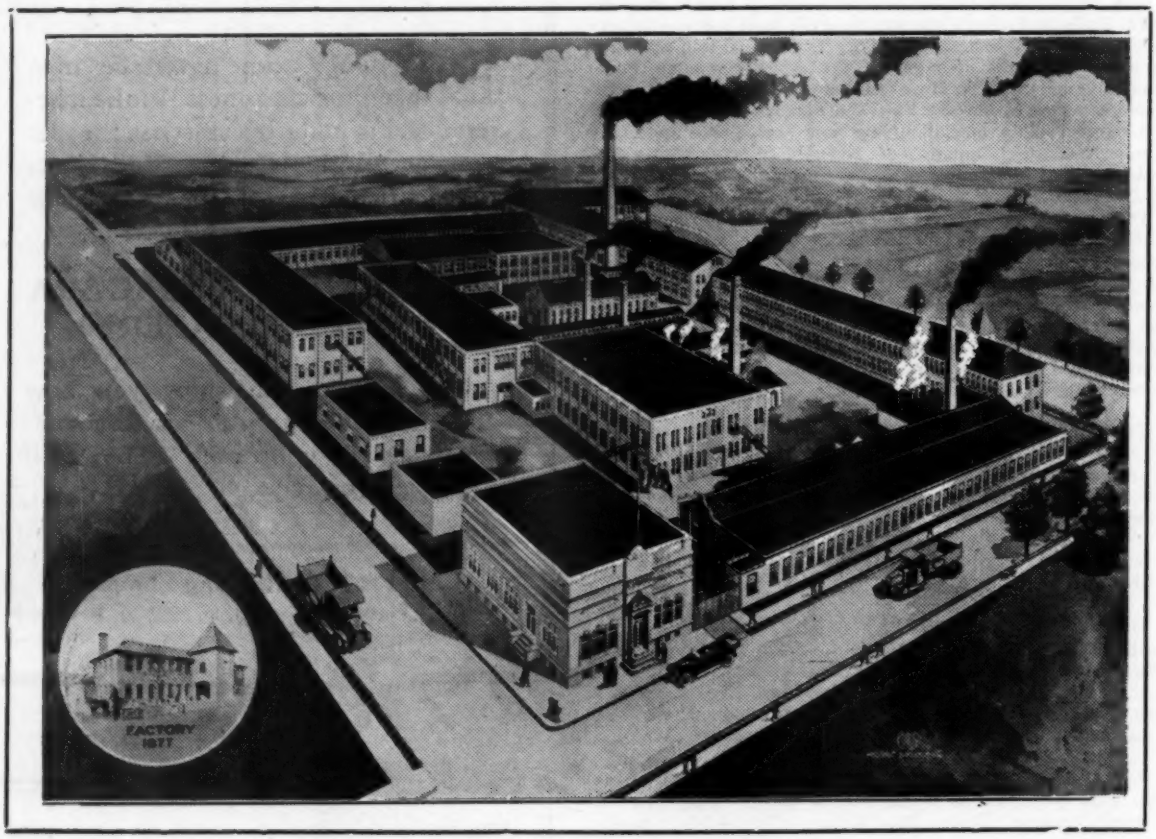


This Illustration Visualizes Forty-six Years of Progressive Growth and Unsurpassed Achievements in the Production of

EASTWOOD

FOURDRINIER-CYLINDER-WASHER

WIRES

EASTWOOD WIRE MANUFACTURING CO., BELLEVILLE N.J. U.S.A.

paper every year, and the following striking paragraph is prominently displayed: "Do you believe in patronizing home industry? If so, attach one of the accompanying stamps to every order or requisition you issue for printing and stationery, or for paper of any kind. Many Canadians are led to use foreign-made paper inadvertently because they fail to specify 'Made in Canada.' Others yield to the 'Imported Goods Are Superior' fetish. They may not be aware that Canadian-made paper of equal or better quality, and usually at a lower price, is easily available. If anyone tries to persuade you to the contrary, we would appreciate your submitting the facts to us. These stamps are designed to make it easy to insure the use of Canadian-made paper."

MANITOBA

Hemp Growing Started in Canada

An interesting industrial development in Canada is the successful raising of a large crop of hemp to which about 700 acres were planted this year. The Manitoba Government has been assisting the efforts of the Manitoba Cordage Company in the development of a Canadian source of supply for its raw material. The crop has attained heights of from six to ten feet and more, and the quality is excellent.

The development of this local industry should be of interest to the paper mills using twine and rope, since they will eventually get a considerable amount of home-grown fiber when it has served its purpose elsewhere, as well as having a supply of raw material in the waste from the preparation of the hemp fiber.

C. C. Irvine, who for a number of years has been assistant to General Manager C. H. L. Jones, of the Spanish River Pulp and Paper Mills, Ltd., at Sault Ste. Marie, has been appointed manager of the Manitoba Paper Company's mill at Pine Falls, near Winnipeg, and has left to take up his new duties. Before his departure, Mr. Irvine was entertained at luncheon by Mr. Jones, who spoke highly of Mr. Irvine's services at the Soo and predicted a successful career for him as manager of the Manitoba mill.

Splendid progress is being made on the new mill of the Manitoba Pulp and Paper Company at Pine Falls. The equipment is now being installed and it is expected that the plant will be ready for operation in December. The contractors are now engaged in laying out a model town in connection with the development.

The Industrial Development Board of Manitoba, in co-operation with the provincial government, is making a survey of the area between Lakes Winnipeg and Winnipegosis with a view to ascertaining the extent of agricultural lands and the ultimate establishment of a pulp mill at Grand Rapids. Eastern interests, it is rumored, are prepared to establish a $9,000,000 mill at Grand Rapids provided transportation is assured.

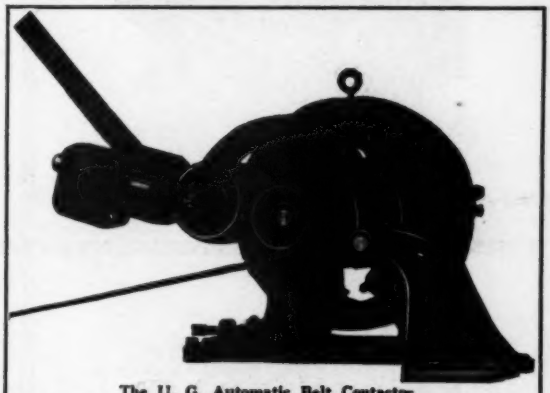
NEW BRUNSWICK

As a result of complaints from North Shore saw mill operators and of the generally unsatisfactory state of affairs in the lumber industry, the government has appointed Mr. Justice Grimmer, of the Supreme Court of New Brunswick, and F. C. Beatty, of St. John, as a commission to investigate the lumbering industry in the province.

Bathurst to Expand

The plans of the Bathurst Company, of Bathurst, for the addition of one new newsprint machine to its mill will be put into effect immediately upon receipt of the report of the company's engineers on the power situation on the Nipisiquit River. At the present time engineers are studying the pos-

Proved Results Instead of Experiment



The U. G. Automatic Belt Contactor

WOOD'S SHORT CENTER BELT DRIVE

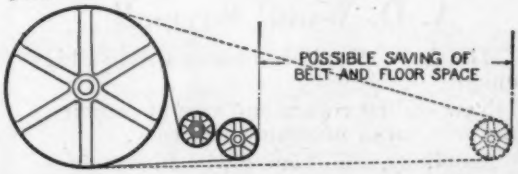
When you buy a Wood's Power Transmission Appliance you are not buying an experiment but a proved result of long lasting economy—a result that carries with it the experience of 70 years in solving power transmission problems.

For example, the Wood's Short Center Belt Contactor is a power transmission machine with distinct money saving, power saving, appeal. Saves belts, saves power, saves floor space. The increased arc of contact illustrated below shows how you get full power transmission with this Short Center Belt Drive—and that means big power and belt savings over the old method.

Wood's Short Center Belt Contactor is successfully and economically serving many and varied industrial plants throughout the United States. It will in your plant, too.

There's a Wood's Dealer near you who can quickly and efficiently supply your power transmission needs. Get acquainted with him. He's a worthwhile man in your community and he's reliable.

Just ask him how you can effect savings with this present day power transmission need. He'll be glad to tell you—and prove it—without obligation on your part.

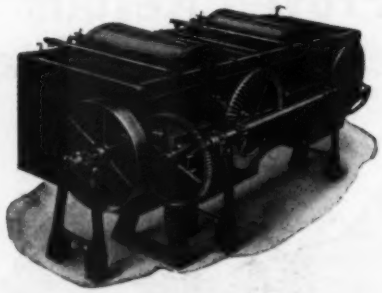


T. B. Wood Sons Co.
Chambersburg, Pa.

NEW ENGLAND BRANCH: Cambridge, Mass. SOUTHERN BRANCH: Greenville, S.C.

Makers of Power Transmission Machinery Since 1857

Shafting, Cast Iron Hangers, Pulleys, Flexible Couplings, Friction Clutches, Short Center Belt Drives, Hanger Boxes, Pillow Blocks, etc., equipped with or without Wood-Fafnir Ball Bearings.



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TWO A. D. WOOD CYLINDER TYPE

A high efficiency machine handling large capacity with low power and minimum upkeep.

Absence of couch or doctor and continuous self cleaning wire are important features in handling stock containing bleach liquor.

Simply and strongly constructed.

Our new collars ABSOLUTELY ELIMINATE losses by sealing straps. Furnished at nominal cost.

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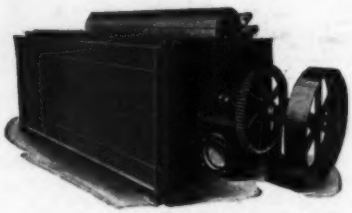


Decker and Decker Washer

We make many styles which are designed for various mill conditions and from an operating standpoint.

Our name on these machines gives you the assurance of many years of satisfactory performance.

The Walker Attachment is applicable to any model or to your present decker. It will increase their capacity 33% at negligible cost.

STANDARD ROWE WIRE 70 MESH
SHOWER PIPE
STOCK
ADJUSTABLE OVERFLOW
WHITE WATER
STOCK ENTRANCE
LEVEL CONTROLLABLE
OUTLET FOR THICKENED STOCK OR SAVED FIBRE
BAFFLE FOR DISTRIBUTING STOCK EVENLY ON CYLINDER
SLATS TO AGITATE STOCK AND KEEP IT FROM RUBBING ON WIRE, ALSO TO PICK THICKENED STOCK OVER DAM

A. D. Wood Save-all

The A. D. Wood Machine as a Save-all is unique.

New sealing collars and ease of patching the wire mean maximum efficiency.

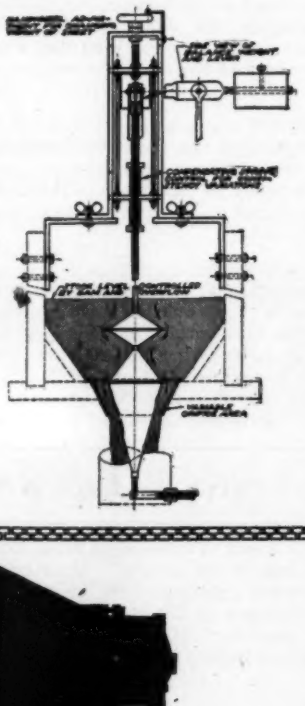
Simplicity, self-cleaning wire and continuous high capacity give satisfaction and greater savings.

We have reports of 90-95% efficiency for a four year period

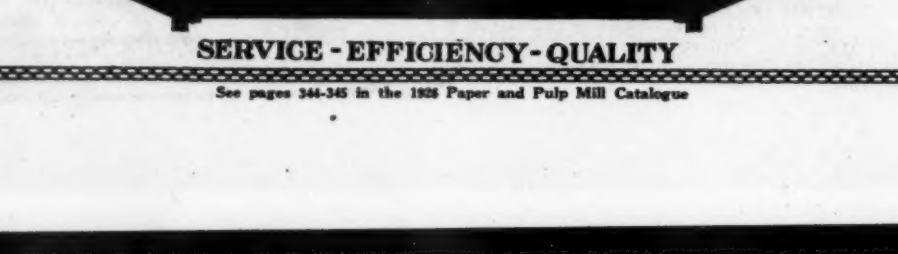
Boivin Weight Regulator

FOR FOURDRINIER MACHINES

More than 50 already giving invaluable service on fast and slow speed machines, handling all kinds of stock. Install it, adjust to give desired weight, and leave it alone. Overweight claims eliminated, with big improvement in broke loss and running conditions. Handles capacities ranging from 15 to 150 tons with equal efficiency. Sensitive action and direct control.



Write Us Now for Details



SERVICE - EFFICIENCY - QUALITY

See pages 344-345 in the 1926 Paper and Pulp Mill Catalogue

sibilities of the river to ascertain whether the power is actually available and whether it may be economically developed. In order to provide a regulated flow in the river, it will be necessary to erect new storage dams.

Recently the company shipped 1,400 tons of kraft pulp to the Middle Western states via the St. Lawrence route. This marks the reopening of a market which the company had formerly but which, due to the poor conditions prevailing generally in the market for sulphate kraft, had been closed for some time.

Intimation has been given that the New Brunswick Electric Power Commission is starting immediate investigations of a proposal to carry out a hydro-electric development on the St. John River near Meductic, about forty miles up the river from Fredericton.

It is not expected that definite plans regarding the new 200-ton newsprint mill of the Fraser Companies will be arranged until next spring. While the company has already contracted for a supply of power from the Grand Falls development, upon which work was begun a couple of months ago by the St. John River Power Company, yet this power will not be available until about July, 1928, and it will therefore not be necessary to have the mill ready for operation until that date.

International Paper Company, which is developing Grand Falls on the St. John River, through its subsidiary, the St. John River Power Company, has revised its plans and intends going ahead with an 80,000-h. p. initial development, instead of a 60,000-h. p. development, as at first planned. The installation will consist of four 20,000-h. p. units.

A couple of years ago representatives of Hollingsworth and Whitney, pulp and paper manufacturers in Maine, purchased about twelve properties along the St. Croix River between St. Stephen and Dufferin. The announcement was made that this company would start building a pulp and paper mill the following year. However, no start has been made in the construction of the mills. At the time of the purchases the agents of the company stated that the intention was to develop water power on the St. Croix. It is now reported that the company will build the mill when the development of the tidal power at the mouth of the Bay of Fundy is assured.

NOVA SCOTIA

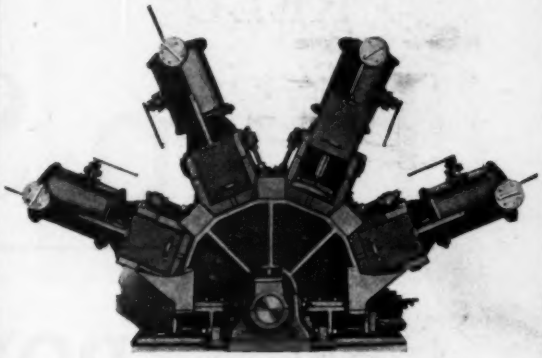
Bear River Plant Acquired by Canadian Paperboard

Canadian Paperboard Company, who have plants in Montreal, Frankford and Campbellford, Ont., and are the largest producers of board in the Dominion, have bought the assets of the Bear River Pulp Co., Bear River, formerly owned by Clarke Bros., which some time ago went into the hands of a receiver. Some details have yet to be worked out, but it is expected the Canadian Paperboard will take the property over before the end of the current year.

The assets of the Bear River Company were sold by auction some time ago, but the name of the purchaser at that time was not revealed. The sale was made on behalf of the first mortgage bondholders, and it is feared that junior securities have no equity behind them.

One of the most remarkable cases in British legal history came up for argument before the Privy Council in London on October 21st, and is expected to take up the better part of three weeks. It is the Labrador case wherein both Canada and Newfoundland are seeking to prove they own a certain portion of the bleak northern region known under that name. More than twenty years have passed since the lawyers concerned began collecting documents bearing on the Labrador dispute, and it has already cost $1,000,000. The matter is of vital importance as the disputed regions possess tremendous water power development potentialities and are also claimed to contain large pulpwood reserves, though the existence of these has not been definitely established.

"Repeat Orders Are the Best Indorsement"



International Grinders

Built with either three or four pockets — heavy construction throughout.

Pockets held in position by two large steel bolts—bridge trees extra heavy.

Pockets large in size, so that frequent refilling is unnecessary.

Save-alls below outside pockets catch all pulp when pockets are opened.

Special tapered bronze bushings —thread on inside only.

Bearings very large—wedge adjustable.

Equipped with Barker valves which are designed so that they stay tight.

GREEN BAY BARKER COMPANY
GreenBay Wisconsin
"Machinery Manufacturers"

REED SPAFFORD

Pulp Screen

WHAT DOES YOUR **POWER** COST YOU

UNHEARD OF LOW **POWER** PER TON

HALF **POWER** SAVED

VERY LARGE CAPACITY

VERY LIMITED FLOOR SPACE

OFFERED ONLY AFTER MANY MONTHS OF CAREFUL DEVELOPMENT

Improved Paper Machinery Company

Nashua, N. H., U. S. A.

BRITISH CORRESPONDENCE

Present Trade Conditions

British paper makers have received another setback, in the shape of a sudden shortage in the supply of foreign coal, with a consequent increase in the price of such stocks as are available. Quotations for foreign coal at the present time are as high as 70s. per ton, and this for coal which is less efficient than the British product formerly sold at 20s. and 30s. per ton.

Many of the paper makers are still bearing the whole of the additional expense themselves. Some of them, however, such as the makers of super-calendered papers, would prefer to raise the selling price but feel that they would be ill-advised to do so, owing to the present depressed state of the trade of the country.

The cause of the decrease in the available supplies of foreign coal has not yet been accounted for. Whether or not an actual shortage is imminent is not known. In some quarters, it is suggested that there may be a hold-up in supplies with a view to the forcing up of prices. This development seems particularly unfortunate in view of the fact that, whatever decision may be taken in the coal mining controversy, it is very doubtful if an adequate and constant supply of coal will be produced from the British pits before the end of the year.

One of the effects of using foreign coal—the properties and heating capacities of which are only just beginning to be understood by mill stokers—has been uneven working. A great deal of the paper produced has varied considerably in surface and substance, owing to the sudden cooling of the drying cylinders and calender rolls due to the improper handling of the coal.

It is noticeable that the imposition of the Wrapping Paper Duty is having effect on the prices quoted by Scandinavian makers of kraft. Their latest quoted prices with the duty added are about £1. per ton above those of British makers of best krafts. The latter firms are fully booked with orders, particularly with the heavier weights, which are almost comparable to the best Swedish varieties. Many new machines are being built for this work, and adaptations are being made to others less profitably employed. The greater part of the foreign wrappings, which accumulated in dock warehouses prior to the imposition of the tax, are now being cleared, and there is little stock remaining which is sold below present market price.

Of recent years, the tendency in this country has been for the proprietors of newspapers and of large publishing concerns to take under their own control one or more paper mills, in order to ensure an adequate supply of paper for their publications. Examples of this are the Daily Telegraph, which has its own mill at Dartford, Kent, and every issue of which bears the imprint: "Printed entirely on paper of British manufacture," and the Amalgamated Press, Ltd., of which Lord Rothermere is the head, which owns its own forest lands and paper mills in Newfoundland, thus controlling the business from one end to the other—from pulpwood to published periodical.

But a recent big deal in the British paper-making industry which has received considerable prominence in the general as well as the trade press, has reversed this procedure. This is the purchase by Mr. Wm. Harrison, the chairman of the Inveresk Paper Co., Ltd., Musselburgh, near Edinburgh, of a controlling interest in The Illustrated London News, and The Sketch, and the acquisition of The Sphere, The Tatler, Eve, The Drapers' Record, Men's Wear, The Graphic, and The Bystander. Prior to this deal, Mr. Harrison had purchased several important paper-making concerns, viz.: The Carrongrove Paper Co., Ltd., Stirlingshire; Watson's of Bullionfield, Ltd., Dundee; Caldwell's Paper Mill Co., Ltd., Fifeshire; Annandale & Sons, Ltd., and Henry Bruce and Sons, Ltd., Midlothian, and the New Northfleet Paper Mills, Kent. News is now to hand that negotiations have just been concluded for the purchase of the ordinary share capital of Olive and Partington, Ltd., a famous British paper-making concern owning three mills in Lancashire and Derbyshire.

At an extraordinary general meeting of the Inveresk Paper

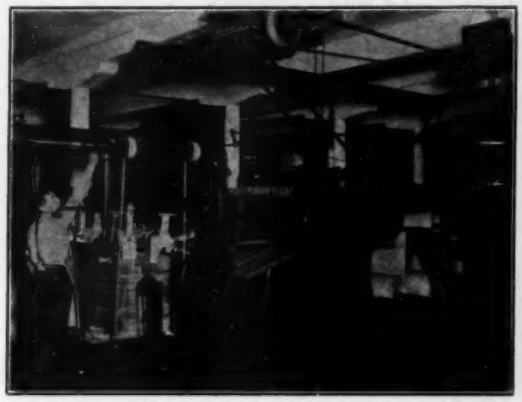


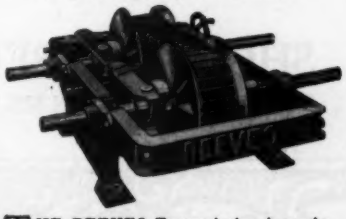
Photo shows a REEVES Transmission driving a paper cutter at the Southworth Company, Mittineague, Mass.

Accurate, Steady Gradations *of* Speeds!

THOUSANDS of paper manufacturers all over the world have eliminated waste in production by installing the REEVES Variable Speed Transmission and getting *accurate* speed control.

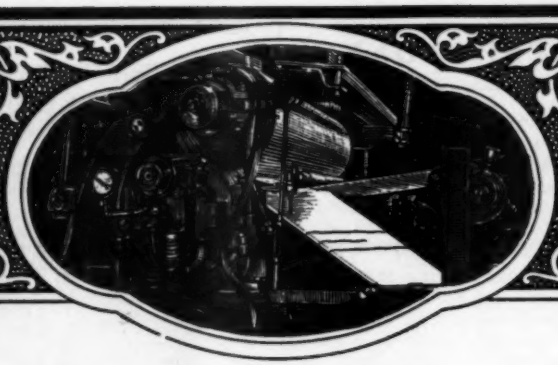
For instance, when a REEVES operates a paper cutter, the feed rolls run at a constant speed, and the speed of the knife is regulated to cut exactly the length of sheet desired. This simple, inexpensive device will run at any speed described between fastest and slowest so you can cut any length sheet at any time. Send for our catalog A-66 which gives full information.

REEVES PULLEY COMPANY
Established 1887
COLUMBUS, INDIANA



THE REEVES Transmission is a simple, compact mechanical device which receives power at a constant speed and delivers it at any speed desired to any machine or group. It will maintain one set speed indefinitely, or may be changed instantly to meet any different operating condition. Accurate and dependable, always.

REEVES
Variable Speed Transmission



Felts that make paper at a lower cost per pound

There's one kind of felt that will make paper more economically for you than any other kind of felt.

It's a felt that will run longer with less down time for washing. It's a felt that takes out more water so that there is less sweating to be done in the dryers. It's a felt that delivers a stronger sheet to the dryers so that there is less broke and fewer imperfect sheets to be sold as scrap or seconds.

Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

Usually that felt is one that must be individually designed and woven to meet your own particular needs.

To find it and work it out is a matter of experience—experience in making and experience in selling.

In back of Hamilton Felts is more than three generations of felt making experience—assurance of experience in making. And the Hamilton man who calls on you is a practical felt man—assurance of felts that meet your individual needs.

In a word, in Hamilton Felts you get a combination that means better felts and consequently better paper and a lower cost per pound for making. And once you try a Hamilton Felt you'll use them always—they really *are* better.

SHULER & BENNINGHOFEN, Hamilton, Ohio

THE MIAMI WOOLEN MILLS **Founded 1858**

Hamilton Felts

Co., Ltd., held in Edinburgh on October 12th, Mr. Harrison referred in detail to the steps which the board had taken during recent years to build up what, he said, was undoubtedly today one of the largest and most successful concerns in the paper trade, not only in this country, but also abroad. It had been the settled policy of the board, he said, to acquire on advantageous terms a group of paper mills, and to safeguard their position with an assured supply of raw materials produced under the company's own control. An indispensable adjunct to this policy was an assured market for a large output for their manufactured goods, also under their control, and, with this in mind, negotiations had now been concluded with Sir John Ellerman for the purchase of a controlling interest in two journals, and the acquisition of five others, and with Sir Edward Iliffe for the purchase of two other journals.

In addition to his acquisitions in Great Britain, Mr. Harrison purchased earlier in the year, on behalf of the Inveresk Paper Co., one of the largest pulp, paper and chemical works in Germany, the Koholyt Co., formerly belonging to the Stinnes group, with mills on the Rhine, and in East Prussia, in connection with which a new company was formed, with the title of International Pulp and Chemical Co., Ltd. Two further purchases of German mills by this company have been announced this month, viz.: the Nederlahnstein Pergament Papier Factory, and the Cellulose Works at Regenburg.

In a report which has recently been issued by His Majesty's Inspector of Factories an account is included by a medical inspector of factories—Dr. Sibyl G. Overton—of an investigation made in twelve different industries on the question of weight lighting by women and young persons. It was found that the paper trade headed the list for the weight of the individual load carried. The average relation of load to obdy weight was 57 per cent, and the average daily amount lifted by each woman was 1.1 tons. It is considered by Dr. Overton that 40 per cent of body weight should be the maximum load for women and young persons continuously employed in lifting and carrying.

The same report states that 586 of the accidents in the paper trade in 1925 (eight of which were fatal), were caused by machinery moved by mechanical power. Thirty-six accidents in this industry were involved by transport, and 1,381 were due to other causes.

A matter which has received attention in several of the trade journals of late has been the question of utilization of old newspapers in the production of paper. It has been pointed out that the two principle obstacles to this are the difficulty of getting rid of the ink, and the cost of collection. Although several methods of de-inking have been invented, the cost of the process renders it hardly worth while, and for the waste paper merchant to collect newspaper in small lots, sort, bale, and pay part carriage would cost more than he would get for them.

One expert on the subject has pointed out that a much more reliable and constant means of disposal, and one which is likely to become bigger in future, is to use old newsprint as a material for making box boards. When used in this way, there is no need for de-inking, as the grey color resulting from the presence of the ink is no detriment, when used for the center of a triplex, or the back of a duplex board. One of the biggest of these mills is within easy distance by water from London; but in addition to this use, there is still a sale for the overprints of the better quality sheets, if they are press-packed and shipped to India. In that country they are used as cheap wrapping paper, and many thousands of tons were sent out there just after the war.

The Waterways Paper Products Company of Chicago is now installing a new Black-Clawson Company high-speed news machine. It is said that this machine is designed to run more than one thousand feet a minute. This machine will be driven by a Westinghouse sectional electric drive.

W. H. Swanson of the staff of the Forest Products Laboratory, Madison, Wisconsin, has accepted a position for the Champion Fiber Company, Canton, North Carolina, and will be in charge of the research work along the lines of investigation in the sulphite piping process.

Pioneers in Paper Making

BELIEVING it will interest our friends to know something of the pioneer paper makers of America, brief notes of the earliest paper mills in different parts of the country will be recorded below from month to month.

New York's First Paper Mill

The first paper mill established in New York was built at Hempstead Harbor, Long Island by Hendrick Onderdonk and Henry Remsen, with whom was associated Hugh Gaine, a well-known printer of the time, and publisher of the New York Mercury.

There is some doubt as to the exact date of the establishment of the industry, but the evidence points to 1733, as in October of that year an advertisement was inserted by Hugh Gaine in the Mercury, beseeching "the good people of this Province" to save rags for the paper mill "lately erected," and assuring them that the undertaking "if attended with success, will be a saving of some hundreds per annum to the Colony, which has constantly been sent out of it for paper of all sorts."

Established 1842

Cheney Bigelow Wire Works

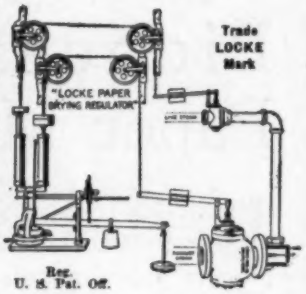
Experienced and Progressive

Fourdrinier and Cylinder Wires
Dandy Rolls and Cylinder Moulds
made and recovered

SPRINGFIELD, MASSACHUSETTS

LOCKE Paper Drying Regulator

This regulator controls both live and exhaust steam for any purpose where steam is used, or it will control the direct steam when used alone. Is unlike, both in construction and operation, any device that has heretofore been designed for this purpose. Controls not only temperature of the dryers when paper is running over them, but maintains the same temperature whenever there is a break in the paper. This machine is most sensitive to any change in temperature of dryers, yet it has been found to be perfectly reliable and what is more, is not continually getting out of order. Also manufacturers of other steam specialties.



Reg. U. S. Pat. Off.

Locke Regulator Co., 76 North St., Salem, Mass.

"Locke" Regulator Agency, 30 Cortlandt Street, N. Y. C.

Ham Feltz sez:

"It's been my observin' that it may be all right to say 'boys is boys' but you can't say 'felts is felts.' There's as much difference between any old kind of a felt and a Hamilton Felt as there is between one of those old rattle traps of 1900 and a 1926 latest model. You've got to try them to know how much better they is."

Hamilton Felts

ECONOMIZERS

Foster Preheating and Superheating Surfaces for boilers and Industrial processes steady the heating action, prevent overheating, and save fuel by increasing the heating efficiency.

AIR HEATERS

FOSTER

POWER SPECIALTY CO., 111 Broadway, New York

Boston Philadelphia Pittsburgh Cleveland Detroit, Chicago Kansas City Dallas Denver San Francisco Los Angeles London, Eng.

SUPERHEATERS

The value of Foster Heat Engineering Service and Foster Construction are proven by more than 20 years of experience and over 11,000 installations in every industry and in every type of plant.

WATER WALLS

POWER PLANT PIPING

We are fully equipped to supply fabricated materials and to install complete piping systems for Electric Power Stations, Blast Furnaces, Steel Mills, Coke Works, Paper Mills and Industrial Plants of every description—backed by an experience of almost a quarter century.

Pittsburgh Piping & Equipment Co.

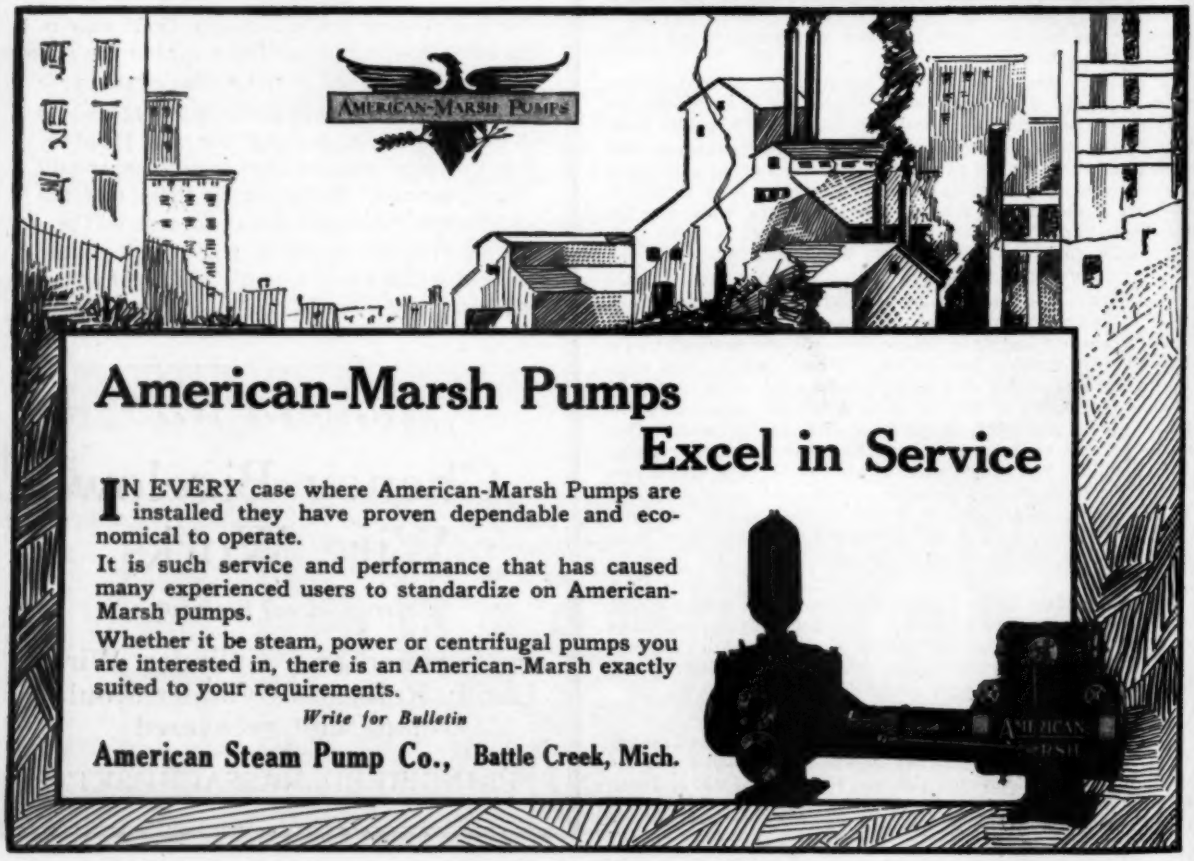
PITTSBURGH, PA.

Steel Plate Construction

Steel Storage Tanks, Blast Furnaces, Gas Holders
Steel River Barges and Plate Work of all Kinds
Steel Transmission Towers

RITER-CONLEY COMPANY

General Offices, Pittsburgh, Pa.



American-Marsh Pumps Excel in Service

IN EVERY case where American-Marsh Pumps are installed they have proven dependable and economical to operate.

It is such service and performance that has caused many experienced users to standardize on American-Marsh pumps.

Whether it be steam, power or centrifugal pumps you are interested in, there is an American-Marsh exactly suited to your requirements.

Write for Bulletin

American Steam Pump Co., Battle Creek, Mich.

OHIO NEWS

Controversy Over Water Rights Settled

United States Judge Hickenlooper has entered order authorizing Sidney L. Willson, as receiver in the receivership proceedings of Michael P. Murphy and the Old Colony Trust Company against the American Writing Paper Company, to carry out agreements for a settlement of the controversy with Goudie & Johnson over water power rights along the Miami and Erie canal at Excello, in the southern part of the Miami Valley. The receiver was authorized to make formal transfer of these rights by the State of Ohio to the Harding-Jones Paper Company, present owner of the Excello and Franklin mills of the American Writing Paper Company.

It is stated that in connection with these settlements, Willson is to take over a fund of $20,000 and interest held in escrow with the Citizens' National Bank and Trust Company, Cincinnati, and is to pay to the Harding-Jones Paper Company $1,200 upon the execution of the water power lease and upon its release of any claim to the $20,000 fund.

Mr. Willson as receiver also is authorized to pay to Goudie & Johnson, $3,800 upon the execution of the water-power lease to the paper company, and Goudie & Johnson's release of all claims to rights under the lease.

It is believed by those who have followed the recent litigation relative to water rights at Excello and Franklin, that this legal procedure will bring the matter to an end.

The matter has been of special interest and importance as the Franklin mill was sold some time ago to the Maxwell Paper Company which is installing modern equipment in the old Harding mill, while T. A. Jones of Middletown and Franklin is making substantial improvements at Excello. Mr. Jones acted as the manager who sold the Franklin mill to Maxwell Howard and associates. Mr. Howard acquired water rights at that time which have no immediate connection with the Excello rights, it is reported.

Mr. Howard's own engineers are now engaged in improving the valuable water rights adjacent to Franklin, including the waterway extending to the State dam, near the Miami Valley Chautauqua grounds, 12 miles south of this city.

Three Men Injured at Tippecanoe City

Frank Stokes, engineer of the Tippecanoe City paper mill, was burned about the face and arms and two other men received burns as the result of an experiment in the use of fuel made of coal, crushed and pulverized, and blown from the fan into the fire pit, recently.

The damage to the equipment was not heavy but a shutdown of one day was necessitated. The mill was placed in operation after the brief delay and it is believed greater success with the heating and power system will be attained.

In addition to Engineer Stokes, Leonard Wood, of Piqua, had his hair singed by the explosion and fire, and William Manson was burned on the arms.

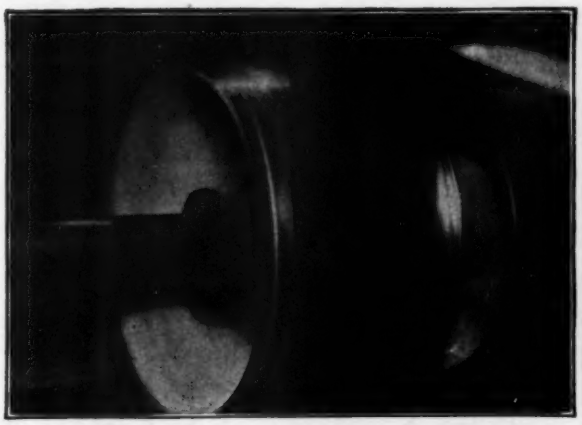
Interstate Commerce Commission Meeting

Dayton and Miami Valley towns were represented at the meeting held recently in Cincinnati by representatives of the Interstate Commerce Commission and business men, principally manufacturers.

Middletown's representation was especially heavy as most paper mill owners are in favor of changing permanently to Eastern time, especially since this method is followed in the adoption of the so-called daylight saving time from April until October.

Hamilton virtually has adopted Eastern time though no official action has been taken by municipal bodies. A gentlemen's agreement has been made by manufacturers and merchants that they would abide by the new order until compelled to change back to Central Standard but this plan now is not expected.

The various railroad companies entering Cincinnati and Miami Valley towns also sent delegates to the meeting. It



Slip Belts on Winder Drives

This is one of the difficult services in paper mill work where Stanley has won its spurs: Only one take up is usually needed.

Stanley is not the ordinary solid woven belt for into it is woven the pride of generations of weavers whose ideal has always been to make the finest of all fabric belts. Stanley is the victor of thousands of tests. It is fit. Write.

Stanley Belting Corporation

320 Broadway, New York

124 Adelaide St., W. Toronto, Ont. | 17 N. Jefferson St., Chicago | 42A Southwark St., S. E. 1. London, England

Stanley

Solid Woven Cotton Belting

ALLIGATOR STEEL BELT LACING

JUST like driving nails. Makes a smooth hinged joint famous for long service and with great reserve strength.

Teeth penetrate lengthwise and clinch down flat in a vise-like grip of steel. No punched holes or internal friction to weaken belt ends.

Easily taken apart if belt is to be lengthened or shortened; just relax tension and push out the steel pin.

Used and recommended wherever a belt will give efficient service.

Flexible Steel Lacing Company
4675 Lexington Street
Chicago, Ill.
In England at 116 Finsbury Pavement London, E.C. 2

"Ohio" Products

Cylinder Grease
Cup Grease
Shafting Grease
Auto Grease
Journal Grease
Mine Car Grease
Graphite Grease
Mica Grease
Fibre Grease
Bearing Grease
Rope Grease
Chain Grease
Gear Grease
Gear Shield
Wool Elastic Grease
Wool Yarn Grease
Wool Waste Grease
Block Grease
Cold Neck Grease
Hot Neck Grease
Loco Rod Grease
Crank Pin Grease
Motor Oil
Engine Oil
Turbine Oil
Compressor Oil
Ice Machine Oil
Commutator Compound

Industrial Lubricants of Superior Merit

Write for Samples and Prices

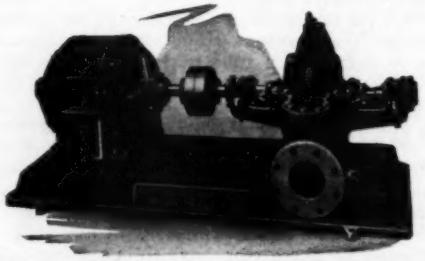
Special Lubricants for Paper Mill Service

The Ohio Grease Co.
Dept. 5
Loudonville Ohio

PUMP ABC

By an Engineer

Always Buy Chicago

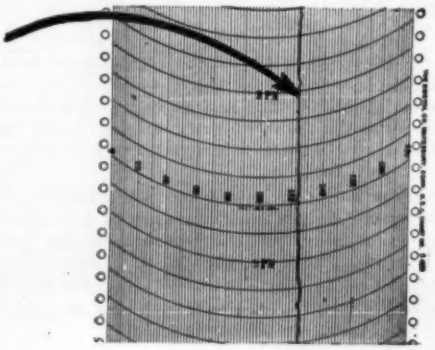


"Chicago" Type "D" single stage horizontal pump. It is used for House, Booster, Circulating, and Fire duties. Designed to handle any kind of liquid or semi-liquid. Sizes up to 6-inch. Capacities up to 2000 Gallons per Minute. Multi-stage pumps for large capacities and high pressures can also be furnished.

CHICAGO PUMP COMPANY
SEWAGE-CONDENSATION-CIRCULATING
BILGE-FIRE-HOUSE-VACUUM
2318 WOLFRAM ST. CHICAGO

How Fast Does It Go?

THERE are a number of machines in the paper industry the speed of which should be known. Most important, of course, is the paper machine itself. The time was, when the back tender used to have the job of counting the revolutions of the driven pulley of the cone drive, by holding his hand where it would get a bump with each turn of a set screw; this number of revolutions was then multiplied by a factor to get feet per minute on the machine. Frequently, however, it was considered close enough to guess at the speed from the position of the belt on the cone pulleys.



Record made by Bristol's Strip Chart Recording Tachometer installed on Paper Machine.

Bristol's Recording Tachometer Strip Chart Model.

Paper making today is a far more accurate operation than it was then. Now, both the superintendent and the operator depend on Bristol's Indicating and Recording Tachometers to show them the **exact** speed of paper machines.

Our Catalog No. 1700 contains information that may help you improve your product. Ask for a copy.

The Bristol Company *Waterbury, Connecticut*

FOR 36 YEARS Ask Any Technical Engineer MAKERS OF
BRISTOL'S RECORDING INSTRUMENTS

is planned if the Interstate Commerce Commission acts, to make the Eastern time belt extend as far west as the Indiana state line, if not farther west to Richmond, Ind., an important railroad point.

A number of paper mill concerns were represented in Dayton the past week at a waste elimination convention held in the assembly room of the Dayton Chamber of Commerce. A number of prominent speakers were in attendance from the mill centers of the Miami Valley and all phases of the work were discussed comprehensively. Though the meeting continued for two days, there were so many features of the proposed work left undiscussed that it was decided to hold another conference in the near future. Waste elimination is considered of primary importance not only in paper mills but in practically all other manufacturing plants.

PACIFIC COAST NEWS

St. Helens Co. Issues New Bonds

Announcement by Blythe Witter & Company was made during the past month of the launching of a new issue of $1,000,000 in first mortgage sinking fund 6½ per cent gold bonds on the St. Helens Pulp and Paper Company at St. Helens, Oregon. The issues are in coupon bonds in denominations of $1,000 and $500 and are due in October, 1941.

The St. Helens Pulp and Paper Company, an Oregon corporation, was organized in 1924 for the purpose of erecting a sulphate pulp and paper mill at St. Helens. The mill is practically completed and will be in operation about January 1 of next year and the proceeds of the present financing will be used by the St. Helens Pulp and Paper Company to pay in part for the completion of the plant and additional working capital.

The company will specialize in the manufacture of high grade kraft pulp and paper, and the entire output has been contracted for by the Graham Paper Company of St. Louis, Mo., who will distribute it as sole selling agents.

Thomas B. Armstrong

People in the paper industry regret to learn of the death of Thomas B. Armstrong, general superintendent of the Oregon Pulp and Paper Company, in Salem, Oregon, on Wednesday, October 6. His death followed an operation performed about ten days before.

Mr. Armstrong came to Salem about three years ago from Niagara Falls, N. Y., to assume charge of the paper plant. He is survived by his wife, Mrs. Margaret Armstrong, and four sons.

New Pulp Mill at Boston Harbor

Construction will be started, in the near future, of a $750,000 pulp mill with an annual payroll of $500,000 in Boston Harbor, eight miles from Olympia, Washington, according to an announcement of the men who are backing the venture, J. L. Peters and J. C. Sams.

The Norpia property is the site chosen for the proposed mill and a survey is to be made very shortly. Actual construction of the plant will be launched as soon as final arrangements and organization of the company can be effected. William E. Douglas and A. E. Riach, both interested in the enterprise, have estimated that the mill will be operating in about nine months.

The Northwestern Pulp & Paper Company of Astoria, Oregon, recently filed papers of incorporation at Salem. A. V. Allen, C. B. Jee and Otto Ronna are incorporators and the capital was put at $35,000.

The merger of the Oregon Pulp and Paper Mills at Salem, Ore., the Columbia River Paper Mills of Vancouver, Wash., and the California-Oregon mills of Los Angeles, is expected to be consummated within a short time. The board of directors are said to approve of the merger and it only awaits

"Eliminate Time Losses and Reduce Belt Trouble"

By using Standard Self Aligning Belt Fasteners Special Rust Proof No. 66 for 6 to 8 ply Transmission or Conveyor Belts any width.

You can't go wrong.

Self Aligning hold the plate firm and square on the belt while rivets are being driven.

It is not necessary to use a rivet holder. Nibs in the rivet hole align the rivet lengthwise of belt, the right way.

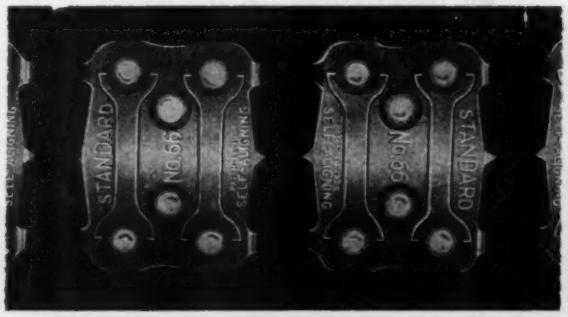
Self Aligning No. 66 are rust proof, and last indefinitely in wet or damp places, and you don't throw them away every time you take up a belt.

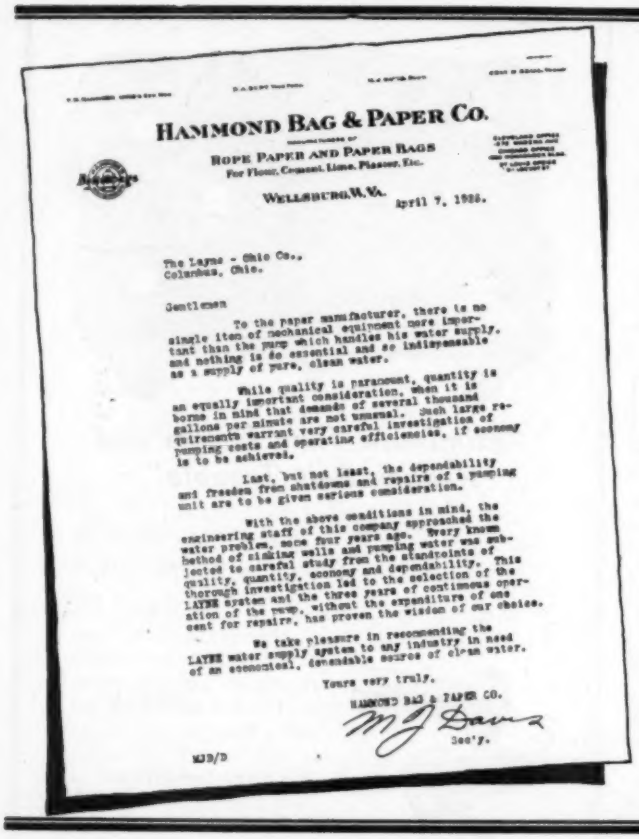
You need not turn your heavy wide Transmission or Conveyor belt over to clinch. Rivets may be clinched by driving against a block of metal on the underside of belt.

Send for sample fastener for comparison with what you are now using. Made for 3 to 8-ply belts.

Manufactured by

THE BOURNE-FULLER CO.
UPSON WORKS
Unionville, Conn., U. S. A.





HAMMOND BAG & PAPER CO.

ROPE PAPER AND PAPER BAGS
For Flour, Cement, Lime, Plaster, Etc.

WELLSBURG, W. Va. April 7, 1926.

The Layne - Ohio Co.,
Columbus, Ohio.

Gentlemen

To the paper manufacturer, there is no single item of mechanical equipment more important than the pump which handles his water supply, and nothing is so essential and so indispensable as a supply of pure, clean water.

While quality is paramount, quantity is an equally important consideration, when it is borne in mind that demands of several thousand gallons per minute are not unusual. Such large requirements warrant very careful investigation of pumping costs and operating efficiencies, if economy is to be achieved.

Last, but not least, the dependability and freedom from shutdowns and repairs of a pumping unit are to be given serious consideration.

With the above conditions in mind, the engineering staff of this company approached the water problem, some four years ago. Every known method of sinking wells and pumping water was subjected to careful study from the standpoints of quality, quantity, economy and dependability. This thorough investigation led to the selection of the LAYNE system and the three years of continuous operation of the pump, without the expenditure of one cent for repairs, has proven the wisdom of our choice.

We take pleasure in recommending the LAYNE water supply system to any industry in need of an economical, dependable source of clean water.

Yours very truly,

HAMMOND BAG & PAPER CO.

M J Dawes
Sec'y.

MJD/D

3 YEARS!

Continuous Service
No Shutdown

NO EXPENSE—

An achievement? No! Just a Quality Product putting forth that which is built into it. Holding its place as the recognized leader.

Layne & Bowler Mfg. Co.

HOUSTON MEMPHIS LOS ANGELES

A JORDAN ENGINE *for* EVERY PURPOSE

Direct Connected Motor Driven Jordans

Six Sizes:—
Baby Jordan
Pony Monarch
Monarch
Mammoth, Jr.
Mammoth
Bull Dog

DURING the past two years, over 80% of our Jordan output has been of the Direct Connected type.

Our Type "D" Jordans are particularly adapted to direct motor drive because of their sturdy construction and the design of our couplings and motor bases permits ample adjustment to insure full wear of Jordan plug and shell knives.

Paper Mill Engineers recognize more fully each day the advantages of Direct Connected units. Greater production and a finer quality of stock can be obtained and, because the speed of a motor is inherently uniform, a maximum quantity of a given grade of stock can be produced. Then, too, through the use of meters, the finishing point of the stock can be accurately indicated and the degree of contact of the Jordan knives can be determined more readily than when the "feel" of the operator alone is relied upon. Because belt pull is eliminated, the undue wear on bearings and eccentric position of the plug, so often found in Belt Driven units, is avoided.

Specifications and Prices Furnished on Request

THE NOBLE & WOOD MACHINE CO. **Hoosick Falls, N. Y.**

For list of our entire products, see page 387 in the 1925 Paper and Pulp Mill Catalogue

the sanction of the stockholders. It was reported that approximately 80 per cent of the stockholders had already agreed to the plan. F. W. Leadbetter of Portland dominates all three properties.

MICHIGAN NEWS

A verdict for the plaintiff of $1,431.46 was returned Wednesday afternoon, October 20th, by a jury in Judge George V. Weimer's court in the case of the Western Paper Makers' Chemical Company versus the Eagle Star and British Dominion Insurance Company. This was the full amount asked by the plaintiff company, with accrued interest. The suit was brought to obtain payment of insurance the plaintiff company claimed the defendant company owed it, for fire losses sustained by the chemical company in June, 1925.

The regular monthly meeting of the Cost and Technical Association of the Paper Industry, Kalamazoo Valley division, was held at the Columbia Hotel at 6:30 Wednesday evening, October 20th. The Western Paper Makers' Chemical Company committees had charge of the program. E. J. Turner spoke on the subject, "Side Lights on Resin Productions," and C. E. Muller spoke on "Practical Mill Problems." Following these talks there was a discussion of the subject, "Standard Costs as Now Used by One of the Large Mills in the East." A Cost form was submitted and explained in detail.

G. S. Davis, Allied Mills, Promoted

George S. Davis, secretary of the Allied Paper Mills, has been advanced to the post of general assistant in all company matters to Alex G. Gilman, president. Announcement is made from the president's office that this action was taken following the resignation of George H. Gerpheide, vice-president, to become president of the Hawthorne Paper Company. Mr. Davis is well and favorably known in Michigan paper manufacturing circles. He was connected with the King Paper Company a long period of years as secretary, and when that concern was absorbed by the Allied Paper Mills went with the new company in a like capacity.

Other changes made known officially are the promotion of Charles A. Yonker from the position of assistant purchasing agent to purchasing agent. Rogert Milroy, former assistant cost accountant, has been made assistant purchasing agent.

Mr. Gilman reports that the improvements going forward at the various plants are progressing nicely. The new paper washing system at the Monarch has been started and two new Wickes boilers are installed and will be ready for use Nov. 1. Two new rotary cookers have replaced the open type tub cookers at the Bardeen division. One is in use and the other will be ready for operation Nov. 1. These improvements, Mr. Gilman says, tend toward economy as well as a more uniform product.

The rehabilitation of the power plant at the King division, partially put out of commission by the breaking of an engine during the summer months, is progressing satisfactorily.

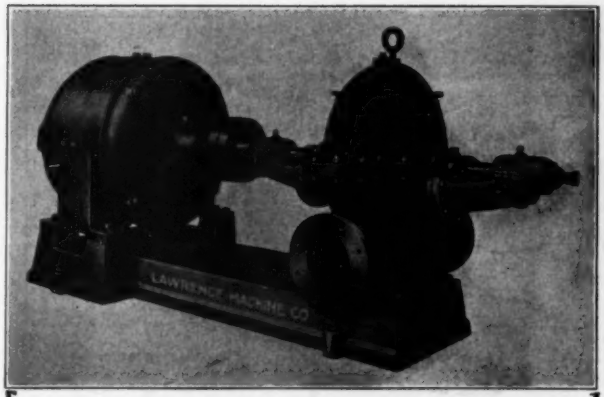
Mrs. Alex. G. Gilman has been named vice-president of the Kalamazoo chapter of the Red Cross.

Mr. C. A. Fox, secretary-treasurer of the Bryant Paper Co., who has been absent from his desk for the last few weeks on account of an operation, is sufficiently recovered to be back for several hours a day.

Work is being rushed on the new 164-inch machine at the Bryant Paper Co., and it is expected the machine itself will be ready to run Nov. 1st. The jordans and beaters are not as yet all set, but they plan on having paper going over the machine Nov. 15th. This is the only machine in the valley with the New Beloit wet end.

"Labor Cannot Be Driven," Supers Told

Labor cannot be driven today nor can greater production be secured through the old-fashioned driving methods of 30



LAWRENCE Centrifugal turbine pump, single stage, horizontally split casing, double suction enclosed impeller, high pressure pumps for water supply service, designed and built in all sizes to meet all conditions. Direct connected to electric motors, steam turbines, gasoline engines, etc. Material and workmanship of the highest class. Please submit to our engineering department your specifications. Prompt service rendered at all times.

LAWRENCE MACHINE COMPANY
LAWRENCE, MASS.
Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

"Tide Water at the Power Show"

THE Fifth National Exposition of Power and Mechanical Engineering Equipment is to be held at the Grand Central Palace, New York, December 6th to 11th, 1926.

You are cordially invited to make the Tide Water booth your headquarters at this Exposition.

Make note of this location—Booth 15A, first floor, 46th Street side—and be sure to visit us. * * * *

The Tide Water Power Group
—for paper mill lubrication

TYCOL GEAR COMPOUND
A soft, semi-fibrous grease for enclosed gears under heavy pressure.

TYCOL MEDIUM YARN GREASE
For beater bearings where high temperatures, heavy pressures and water are present.

TYCOL YARN GREASE
For dryer and other bearings operating at high temperatures.

TYCOL LUBRICANT NO. 1
A medium hard grease for Jordans, grease lubricated calender rolls, and for general use.

TYCOL GREASE
A hard grease for replenishing Tycol Yarn Grease.

TYCOL GEAR COATING SOFT
A viscous lubricant especially recommended for use on slow-moving open gears.

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MILL EQUIPMENT

Brim-full of new information!

The New General Catalog of

Hill Clutch Mill Equipment

is just off the press

It illustrates every phase of "HILL CLUTCH" MILL EQUIPMENT. In addition, it contains tables, diagrams, engineering data, etc., which eliminates guess work in the selection of proper power transmission units. Every paper mill man interested in Power Transmission should have a copy. *Write Us.*

The Hill Clutch Machine & Foundry Co.

Power Transmission Engineers

General Office and Plant
CLEVELAND, OHIO

Meisel Sheet Cutters

Automatic Intermittent Feed Sheet Cutting and Slitting Machine

Cuts all kinds and thicknesses of paper from news to the thickest box board, various kinds of cloths, combined cloth and paper, tinfoil and other material taken from the web.

Sheets up to 132 inches in length may be cut

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REDUCTION GEARS

MOORE STEAM TURBINE CORPORATION
Wellsville, N.Y.
"BEST AT EVERY TURN"

For Lowered Costs

Your power transmission costs will be greatly reduced through the use of Falls Transmission Machinery.

Correctly designed and honestly built so as to work with the greatest possible efficiency, Falls Power and Transmission Machinery will lessen the amount of your lost power and render satisfactory service for indefinite periods.

The Falls Handbook 18-B, called the most complete treatise of its kind, belongs on your desk. Send for it today.

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Estimates and gear advice promptly and cheerfully given

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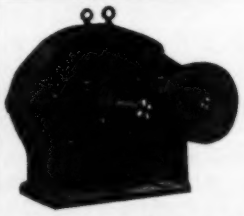


FAWCUS

Herringbone Gear Reductions

They increase production, save labor and decrease wastage on Calenders. Write for literature. Special Machinery—Couplings—Gears.

FAWCUS MACHINE CO., Pittsburgh, Pa.
2819 Smallman St.

years ago, said C. L. Torrence, director of personnel of the Bryant Paper Company, who, Thursday night, October 21st, addressed the meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents' Association on "Centralized Personnel Control."

"The solution of today's labor problems," added the speaker, "consists of analyzing and studying all those personal equation problems that come up daily, and in being able to effect adjustments without loss of time and at a minimum of expense to both employers and employees."

Mr. Torrence called attention to the fact that the best statistics available place the cost of labor turnover at from $50 to $250 per man. In this connection he reviewed the old methods of employment, showing that handled in the old haphazard style of each department hiring its own men, it tended to promote labor turnover, a useless and costly waste. He showed that just as production, costs, purchasing, accounting have been centralized under one head, so has employment or personnel management been made a specialized task. "When central personnel control has been once adopted by an enterprising growing concern, it never turns back to the old method," he said.

He showed that in this age, given to speed and annihilation of time and space, it is relatively important that concerns speeding up production must co-ordinate all activities in every department of the business.

Mr. Torrence outlined the duties of the personnel department from the time when the applicant for work is given his first interview, down to the time he is actually employed and then on through his period of employment. By this means the company at all times has an accurate record of each worker, both before he entered the organization and during his period of employment. He said that today when the foreman of a department wants a man, he makes requisition for one instead of picking up the first applicant that comes along.

"It is not at all difficult to misplace a man," said the speaker. "When that occurs he is not discharged summarily, but taken back to the personnel department and given a chance at some other kind of work—that, of course, unless he has been guilty of serious infractions of the company's rules. We are constantly called on to adjust differences that arise between employees and their superiors.

"Matters of safety and health are of vital importance today. Insurance companies are becoming much stricter as regards accepting such risks and it is quite easy for a concern to become known as an undesirable risk and not be able to place its insurance anywhere, except at an excessive cost. That necessitates general inspection and supervision, mill housekeeping to see that the plant is clean and sanitary, investigation of accidents, and a general campaign of education to promote the prevention of accidents and promote health.

"Centralized personnel control, properly carried out, will insure a better and more satisfied body of workers, with a better balanced force and the speedy removal of undesirables. That means, that if in order to promote the prevention of these conditions it is necessary to discharge a man, he often leaves feeling that at least he has had a square deal. It promotes a friendly feeling in the community for the industry.

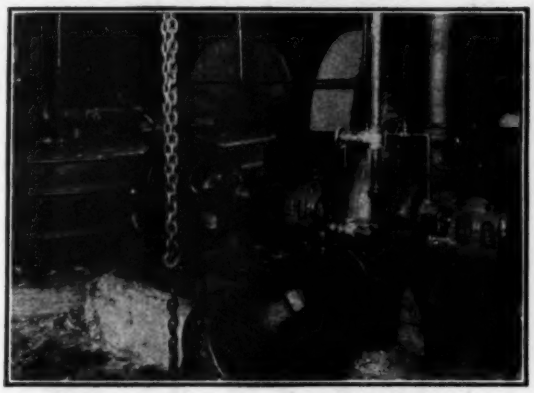
"Always give the men under you a square deal. Treat them as human beings. Remember that you were once in the ranks. One grouch in the department, the result of unfair methods, will contaminate the whole department.

"The new employee needs far more attention than the old one. He should be fully instructed as to his duties and the work in the department, made to feel at home, and to feel that he is with a bunch of regular fellows."

A general discussion followed. Mr. Torrence again and again emphasized the importance of the value of a square deal policy and declared no concern is too small not to successfully adopt personnel management.

The Michigan division also held its annual election, retaining the following officers for another year: President, George H. Pountain, Allied Mills; 1st vice-president, Michael Redmond, Kalamazoo Paper Co.; second vice-president, Clarence Harter, Rex Paper Co.; third vice-president, Clarence Thorne, Watervliet Paper Co.; secretary-treasurer, Alfred Bryant, Bryant Paper Co.

4357 tons of material handled in a paper mill in 24 hours---and 23% more efficiently.



An Economy Centrifugal Pump solving a water handling problem

"No paper mill handles any such amount of material," you protest. Your mill handles 125 tons of water for every ton of paper made. Investigation may definitely point out how you can make a big saving on water handling in your mill.

Economy Pumps are economical in first and final cost. Designed by experienced engineers who have achieved that happy combination of highest possible operating efficiency and lowest possible maintenance cost, they are sold at an initial cost that warrants careful investigation.

Write for Bulletin No. 406 giving construction details, data, etc. Our Sales Service Department, through their broad experience, will gladly recommend the type of centrifugal pump equipment that guarantees you the greatest economy.

Economy
Pumping Machinery Co.
Centrifugal Pump Specialists
83 North Curtis Street Chicago, Illinois
Branch Offices in Principal Cities

Nash efficiency is constant in continuous service

Belt-driven Nash Hytor Vacuum Pump on suction rolls, Mead Pulp & Paper Co., Chillicothe, Ohio.

Here is the reason. In a Nash Hytor, there is no metal-to-metal contact that can cause wear resulting in a decrease in vacuum. Efficiency is maintained at its original high value year after year.

Mills making over 81% of the country's total production of paper prefer Nash Hytor Vacuum Pumps for removing condensation and air from flat boxes, suction rolls, dryers and similar equipment.

Bulletins, prices and recommendation on request.

NASH ENGINEERING COMPANY

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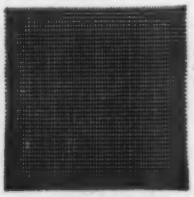
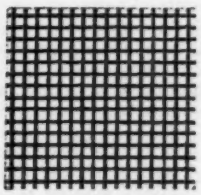
Nash Hytor

VACUUM PUMPS AND COMPRESSORS

FOURDRINIER WIRES



In Brass, Bronze and phosphor bronze, widths up to, and including 250 inches.



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CYLINDER FACES
WASHER WIRES
and CORDUROY CLOTH

THE
W. S. TYLER COMPANY
Cleveland, Ohio, U. S. A.

The following were present: Alfred Bryant, Bryant Paper Co.; George H. Pountain, Allied Paper Mills; C. L. Torrence, Bryant Paper Co.; Homer Stafford, Hawthorne Paper Co.; Jim Foxgrover, Western Paper Makers Chemical Co.; Mr. Meuler, Western Paper Makers Chemical Co.; E. H. Gilman, Bryant Paper Co.; Michael Redmond, Kalamazoo Paper Co.; Clarence Thorne, Jacob Kuss, Fred Scheid, Watervliet Paper Co.; Herbe DeYoung, Jack Spoor, Wm. Carroll, Allied Paper Mills; Emil Yanke, Standard Paper Co.; Jake Parent, Western Board and Paper Co.; Otto Fisher and Nick Collingnon, Bryant Paper Co.

Kalamazoo Mill Accountants Meet

The Cost Association of the Paper Industry, Kalamazoo division, held a meeting at the Columbia Hotel, Kalamazoo, Mich., Wednesday, October 20, 1926, which was addressed by William J. Lawrence, of the Western Paper Makers' Chemical Company, on the subject of "Rosin Production." Charles Mueller discussed "Mill Problems," and Arthur Dreshfield gave a talk on "Standard Costs."

The Kalamazoo division of the Cost Association intends to hold regular meetings during the next six months. To their meetings non-members as well as member mills will be invited to send representatives. The local secretary is Harry C. Bradford, of the Rex Paper Company, Kalamazoo, Mich.

WISCONSIN NEWS

What Is a Navigable Stream?

What is a navigable stream? In the common opinion it is a body of water plied by steamers or other large vessels. But near a paper mill at Port Edwards there is a stream so tiny that a motorboat, or even a row boat could not make any headway on. And this stream has been held navigable. The decision was made recently by the Wisconsin Railroad Commission in rejecting the application of the Nekoosa-Edwards Paper Company for a permit to dam the Four Mile Creek.

The decision is based upon an interpretation of the statutes that even if a canoe once floated on the waters or even if the creek had been used to float logs down on it, it is a navigable stream. Four Mile Creek includes what is called Nepco Lake which was completed some time ago with the purpose of making it a huge settling basin for the paper mill. Because the Railroad Commission has held the stream navigable, it will not sanction the dam project unless the paper company submits to the recapture clause of the statutes whereby it would surrender the waterpower to the state after thirty years. An appeal may be taken. A similar case has been appealed to the United State supreme court by the Fox River Paper Company, of Appleton.

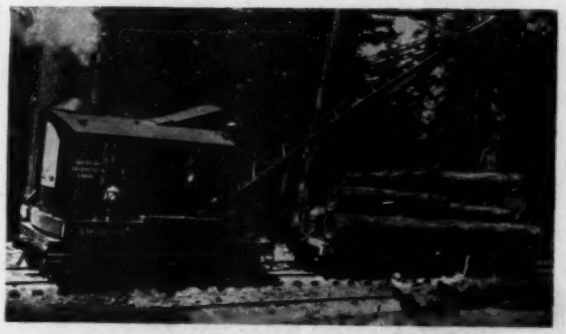
In the circuit court at Oshkosh, Wis., recently, Judge Fred Beglinger ordered a reduction in the assessment of the real estate of the Gilbert Paper Company, of Menasha. The decision was based upon a stipulation between the company and the city of Menasha for a reduction of $134,000.

The Green Bay Foundry and Machine Works, Green Bay, is working overtime filling orders for anti-pollution machines for paper mills and other industries.

Twenty-five subjects will be taught in the course on paper and pulp manufacture which has been introduced in the vocational school at Kaukauna in connection with the Fox River Valley program of paper mill courses.

A financing program may be undertaken by the De Pere Paper Manufacturing Company, De Pere, for the installation of another paper machine in this young but growing plant. Mose Miller, president of the company, had a conference with about thirty De Pere professional and business men in which he laid before them his plans. The company has an opportunity of buying another paper machine at a very moderate

"AMERICAN"
Locomotive Cranes



"American" Locomotive Crane Saves $1,248.00 in 26 Working Days

An "AMERICAN" Locomotive Crane that has been used on heavy duty work by a large lumber company in California has proved its superiority over the old donkey logging by saving its owners $2.00 per thousand feet, $12.00 a car, $48.00 daily and over a period of 26 working days, $1,248.00.

"AMERICAN" Locomotive Cranes have been used extensively by lumbermen and loggers for many years and by their consistently satisfactory and economical performance have won a most enviable reputation.

The "AMERICAN" Locomotive Crane can be had in 5 to 30 ton capacities and on flanged wheel trucks or on Continuous Chain Treads, which is our name for the sturdy "AMERICAN" crawler tread mechanism.

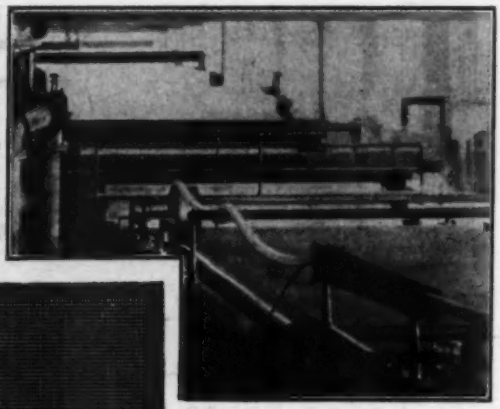
When mounted on Continuous Chain Treads, the "AMERICAN" Locomotive Crane is a free moving machine that can travel from one job to another, regardless of tracks.

The "AMERICAN" Locomotive Crane catalog shows and describes all models of the "AMERICAN" from 5 to 30 ton capacities. Why not tell us to mail you a copy?

10-18-26

AMERICAN
HOIST & DERRICK CO.
Saint Paul, Minn.
New York, Chicago, Pittsburgh, Seattle, St. Louis New Orleans.

for Long Runs at High or Low Speeds



CABBLE Superior Fourdrinier Wires, because of their toughness and strength, give longer and better service in short or long runs, at either high or low speeds.

Over three-quarters of a century making wire products for the paper industry, has taught us how to make Superior Fourdrinier Wires of a smooth, even mesh that will not groove the suction boxes.

Cabble Superior Fourdrinier Wires are made of phosphor bronze or brass in all lengths, widths and meshes. The seams are made to your requirements. Standard mesh, phosphor bronze or brass wire cloth bearing the "Superior" trade mark will also be found of the highest quality.

The WM. CABBLE
EXCELSIOR WIRE MFG. CO.
80-88 AINSLIE ST. BROOKLYN

BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. **BOSTON, MASS.**

price. Heavy wrapping paper and roofing paper would be manufactured on the new machine.

Wisconsin Paper Industry Steady Since 1916

"The paper industry in Wisconsin has been reasonably steady since the beginning of 1916," it was stated by George W. Mead, president of the Consolidated Water Power and Paper Company, of Wisconsin Rapids, in an address before the Wisconsin Conference of Social Work at Milwaukee. Mr. Mead is a member of the finance committee.

"Except for a slight recession in the fall of 1918 immediately after the Armistice was signed, and again in the early part of 1921, the paper mills throughout the state have been in continuous operation. All well managed paper mills have no general unemployment problem. Seasonal fluctuation in the paper industry can be controlled to a great extent by management. A properly managed sales department will accomplish much in making customers distribute their purchases as evenly as possible throughout the twelve months of the year." He also said that many paper mills have well organized construction departments and manage to keep most of the men employed steadily in winter and summer. This is done by starting work early in summer and completing the construction projects by cold weather.

F. B. Whiting and H. K. Babcock, Neenah paper manufacturers, were among a party of twenty-seven business men who left Oct. 11 on a hunting trip to Canada. The hunters were on an annual trip in specially equipped cars of the Soo Line. The stay in Canada was about ten days.

Raymond Kelly, former sales manager of the Kimberly-Clark Company and vice president of the Cellu-Cotton Products Company now known as the Kotex Company, has been elected a director and vice president of the St. Maurice Paper Sales Corporation, of Montreal. The firm handles the output of several big Canada paper mills.

William F. Ashe, employment manager of the Thilmany Pulp and Paper Company, Kaukauna, and former star athlete of Union College, Holyoke, Ohio, has been appointed freshman football coach of Lawrence College, Appleton. He coached the strong American Legion football team of Kaukauna for five years.

The defunct Island Paper Company, of Menasha, has, upon the direction of Judge Fred Beglinger, of Oshkosh, been sold to Norman Brokaw of the Central Paper Company, Menasha, for $75,000. A paper corporation was formed with Mr. Brokaw elected as president and general manager. The plant will need considerable repair and new installations for which approximately $100,000 will be spent by the new company. The corporation has 3,000 shares of common stock without par value, and 1,500 shares of preferred stock with a par value of 100 each. It is expected that the company will be employing about 100 men by the first of the year. The Island Paper Company went into the receiver's hands a year ago, with Hugh Strange of the John Strange Paper Company, Menasha, at the time appointed receiver.

The Kimberly and Niagara, Wis., mills of the Kimberly-Clark Company have entered an inter-mill safety contest to run for several weeks. The beginning of the contest was auspiciously celebrated at Kimberly with a big safety parade. Each week special safety programs are being conducted by the various departments of the mill.

The Lake Superior Paper Company, Ashland, subsidiary of the Menasha Printing and Carton Company, Menasha, has begun the construction of a $50,000 bleaching plant so that the company will be able to produce its own bleached sulphite instead of having it shipped in from other paper mill points. The company also recently built a new warehouse. Tissue paper and thin paper for waxing are the principal products. Nearly 100 men are now being employed.

Fire Prevention Week was appropriately observed by the

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The Rubber Roll Makers NEWTON UPPER FALLS, MASSACHUSETTS

Foremen's Club of the Kimberly-Clark Company at Kimberly, in October. The safety council was present and the chief of the Appleton fire department delivered an address.

A gift of $1,500 to the University of Wisconsin to establish a fellowship in chemical engineering for pulp and paper research was made recently by the Northwest Paper Company of Cloquet, Minnesota. George Brabender, of Peshtigo, Wis., will conduct the work under the direction of Professor O. L. Kowalke. The fellowship is to be continued indefinitely by the paper company.

A $37,000 paper fire occurred at the warehouse of the Miller Paper Stock Company, of Green Bay, last month. This was its second fire within a year. While located at Menasha last year the company suffered a $31,000 fire.

Although Edward T. Harmon, Milwaukee, for many years manager of the Biron Pulp and Paper Company, later belonging to the Consolidated Water Power and Paper Company, was 74 years old when he died, his mother lived to collect a part of his insurance. She is 104 years old.

A large number of men are being employed in the water power construction projects of the Northern Electric Company, allied with the Northern Paper Mills, of Green Bay. Five crews are at work, one excavating rock for the power house at Chalk Hills, another doing similar work for the power house at White Rapids, a third building a power line to Amberg, another stringing lines on the towers between Amberg and Green Bay, and a fifth crew making improvements on Miscauno Island which will be made a summer resort center with the impounding of two artificial lakes through the dam projects. Practically all of the machinery has been purchased. It is believed that the entire construction work will be completed by about May 1, 1927.

Construction of the new five-story factory unit of the Kotex Company, formerly known as the Cellu-Cotton Products Company, Neenah, is being rushed to completion. The walls are practically completed. The building will be entirely enclosed soon so that work can be expedited on the interior during the cold weather.

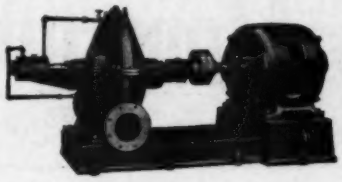
Because the Fox River Paper Company, of Appleton, wished to preserve the beauty of the ivy vines on its Mill No. 1, the sandblasting of the buildings which had been going on earlier in the year was postponed on this plant. The work is now being done, and the process has done much to restore the attractive appearance of the buildings.

The baseball team composed of employees of the Central Paper Company, of Menasha, was awarded the championship trophy by the Menasha Industrial Baseball League.

High marksmanship honors were won in the pistol and rifle competition at the national convention of the American Legion in Philadelphia by Frank J. Schneller, vice president and sales manager of the Gilbert Paper Company, of Menasha. Last year he was the individual pistol and rifle champion of the American Legion, but this year he lost a close battle with Dodson who won the international marksmanship contest in Switzerland this summer.

John Arendt, Sr., employee of the Nekoosa-Edwards Paper Company, Port Edwards, and Andrew Nyquist, track foreman of the Peshtigo Paper Company, of Peshtigo, died during the past month.

The accident list of the past month includes the following: William Luedke, paper mill worker at Marinette, lacerated hand; George Quick, Bergstrom Paper Company, broken neck; Edward May, of the same mill, injured head; John Giese, Nekoosa-Edwards Paper Company, Port Edwards, injured head; Carl Finger, Esco Paper Company, Peshtigo, crushed fingers.



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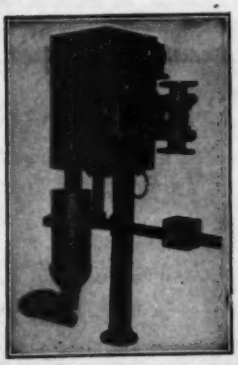

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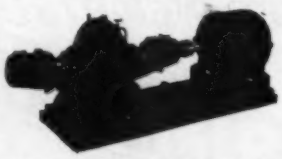

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Technical Developments in the Paper Industry

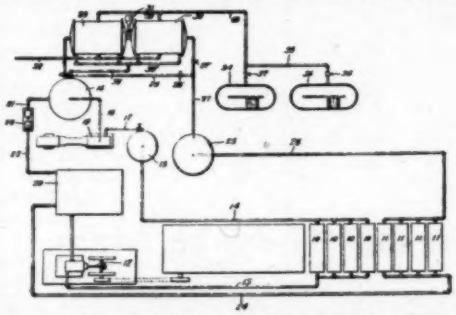
Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Making Paper

THE illustration shows a paper making plant which has been patented in United States Patent No. 1,602,545.

This plant comprises an engine, a boiler for supplying steam to this engine and a drying machine driven by the latter.



The drying machine contains a number of rolls, and means are at hand for supplying exhaust steam from the engine to some of these rolls. The condensate is led away from the rolls to the boiler. Means are also provided for supplying live steam from the boiler to others of the rolls. A heater is provided for supplying hot water to the beating engine and condensate from the rolls, which are supplied with live steam, is fed into this heater. The condensate from the heater is also returned to the boiler. The arrangement of the apparatus is such that continuous but restricted flow of these liquids is provided.

Sulphite Cellulose Liquors

BRITISH Patent, No. 251,019, is concerned with a process for the treatment of sulphite cellulose waste liquors for the purpose of using the treated liquors to make adhesive compositions and in the tanning of leather.

Thus a non-deliquescent body soluble in water is prepared from sulphite cellulose liquor by freeing the liquor from deliquescent substances, or by separating the lignin sulphonates without the deliquescent substances, and drying by means of heat with or without a vacuum, the lignin sulphonates or the liquor which contains them and has been freed from deliquescent substances.

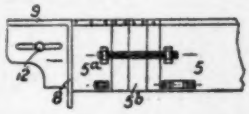
The lignin sulphonates may be precipitated by an organic precipitant, such as alcohol, or the deliquescent substances may be decomposed by oxidizing agents, acids or alkalies or converted into non-deliquescent substances by condensation with an aldehyde, a carboxylic acid or an oxyaryl compound, such as a phenol or salicylic acid, and the lignin sulphonates may then be salted out. The product is useful as an adhesive for mordanting, tanning, and protecting animal fibers from the injurious effects of alkaline liquid.

Sulphite Pulp Making

GERMAN Patent, No. 432,339, describes a process for the manufacture of chemical pulp by the digestion of wood and other suitable raw material with bisulphite solutions. The process is characterized in that the drawing off of the liquor is repeated so often as is necessary to cause the internal pressure within the digester to be lowered. By the removal of a considerable portion of the original liquor filled into the cooker a considerable saving in steam is effected, for the removed liquor need not later be heated up to the high temperatures that are required for the operation. The regulation is effected in such a manner that the sum of the pressure of sulphur dioxide gas and of the steam pressure is equal to the pressure within the digester.

Regulating Flow of Pulp in Paper Making Machines

IN FOURDRINIER machines having an adjustable lip or gate for varying the outlet of the supply tank or feed box, the lip is made in two parts, as shown at (5) and (5ª) in the accompanying illustration.

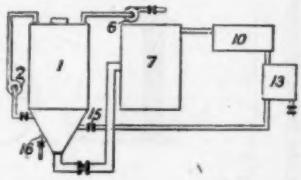


These can be separated to receive the extensions (5ᵇ) by which the machine can be adapted to different widths of the paper web. The parts (8) and (9), closing the end of the outlet and the side of the feed box respectively, move with the parts (5ª), and may be secured in position by a set screw (12). The parts (5), (5ª) and (5ᵇ) are tongued and grooved and, when applied to apparatus as described in former British Patent, No. 229,590, the lip (5ª) has a projecting stud adapted to fit in an arcuate slot in the plate (8). British Patent, No. 254,381.

Making Paper Pulp

IN TREATING plant material for the preparation of pulp, the material is treated in a digester with liquor which contains solvent extractives of such material with or without an added chemical and withdrawing the liquor from the bottom of the digester and spraying it on to the top of the material during the charging of the digester and during the successive stages of the process.

Liquor is first introduced into the digester (1), shown in the accompanying illustration, the material is then fed in and the liquor is circulated by means of a pump (2) to spray onto the material during the charging. The apparatus is then sealed and the pressure reduced to fifteen to twenty inches by a vacuum pump (6) and the circulation by the pump (2) continued. After saturation, a full charge of liquor containing the solvent extractives from the tank (13) is admitted through the valve (15) and the temperature is raised to 212 degrees C for a period of thirty minutes.



The temperature is then further raised to approximately 250 degrees F. for a period of ten minutes by the introduction of steam through a valve (16) and the valve (15) is then closed. When the treatment of the material is completed, the contents of the digester are discharged into a blow pit (7). Vapors and gases containing valuable extractives are released to a condenser (10) and the condensate therefrom passes to the supply tank (14) for a subsequent operation. The process is applicable for the sulphite treatment, and added chemicals may be alkali, acid or neutral in character.

The aforementioned process is patented in British Patent, No. 255,029, and in British Patent, No. 255,030, the addition of sulphur to the digestion liquor is described. Chemical agents, such as soda, caustic potash, lime and the like are used in addition and the liquor is circulated and sprayed on to the material during the charging of the digester and during the cooking.

Paper Drying Cylinder

ACCORDING to German Patent, No. 431,965, the improvement in the paper drying cylinder consists in using connections for the steam line and the condensate to the cylinders

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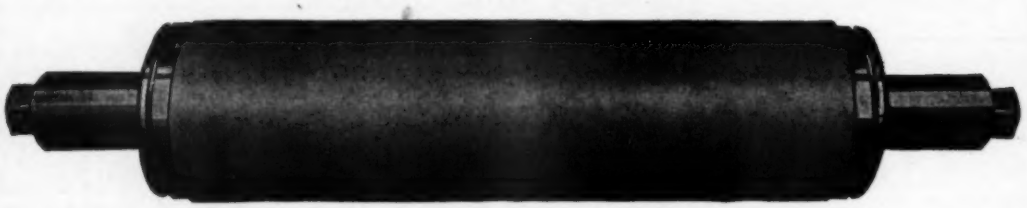

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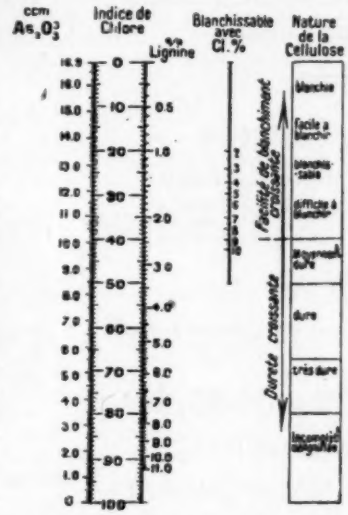
See page 363 in the 1926 Paper and Pulp Mill Catalogue

which are heated with steam, these connections not being packed. This is accomplished by providing suitable sockets on the shafts of the cylinders and the steam and water pipes that fit into one another and make a tight joint. The pressure within the cylinder tends to press the sockets forward against the other part of the joint with the result that the two parts are made to press together very tightly and there is no leakage through the joint.

Chlorine Coefficient of Pulp

THE quantity of chlorine that is absorbed by a pulp is determined in the presence of a titrated solution of lime. When the absorption is zero, then the chlorine coefficient of the pulp is also zero. For an absorption of six per cent, figured on the dry weight of the pulp, it is equal to 100.

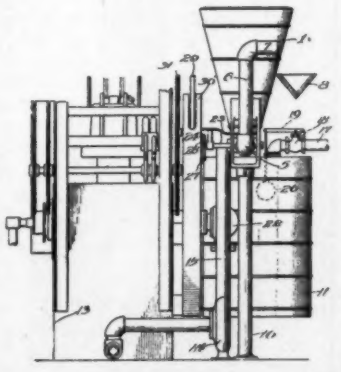


The importance of this determination rests in the inter-relationship that has been defined by Sieber to exist between the chlorine coefficient, the percentage of lignin in the pulp and the ease with which the pulp will bleach as well as the hardness of the pulp. Thus when the chlorine coefficient of the pulp is known, it is possible to deduct therefrom its other properties, as well as the manner in which it will behave on further processing.

The accompanying diagram shows how this can be done. The first scale on the left denotes cubic centimeters of arsenic trioxide, the next scale the chlorine index or coefficient, the next the percentage of lignin, the next the degree of bleach-ability with chlorine, the last the nature of the pulp. The arrow reads facility of bleaching increasing (pointing upward), and hardness increasing (pointing downward). The last scale reads from top to bottom, bleached, easy bleaching, bleachable, difficult bleaching, average hardness, hard, very hard, incompletely delignified. La Papier, 1926, volume 29, number 2, pages 177-180.

Regulating Feed and Density of Pulp to a Pulp Molding Machine

UNITED STATES Patent No. 1,600,731 is concerned with a process and apparatus for regulating the feed and density of pulp to a pulp molding machine or felting machine. The process consists in maintaining a primary bulk supply of pulp solution and then automatically introducing at predetermined times pulp solution from this supply to a secondary bulk supply. The addition of water to this secondary supply is also automatically controlled and this control depends on the level of the pulp solution in this secondary tank. Pulp solution is then withdrawn from the secondary supply tank and is introduced into the felting machine. The excess portions of the pulp solution are returned from the felting machine to the secondary bulk supply. Thus a cyclic circulation is maintained between the secondary bulk supply and the supply in the felting tank.



Determination of Alpha Cellulose

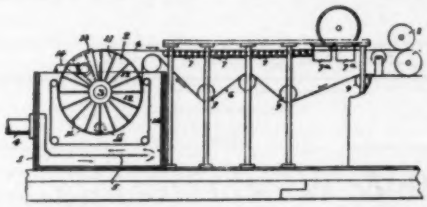
WHEN cellulose is mercerized with 17.5 per cent of sodium hydroxide, filtered and washed, the sum of the hemicellulose in the filtrate, as determined with chromic acid, and of the undissolved alpha cellulose is less than 100 per cent. This is due to the more dilute alkali formed during washing dissolving material which is not dissolved by the mercerizing alkali. A higher extract of hemicellulose is therefore obtained if the mercerizing alkali is diluted before filtering, and the maximum value is obtained when the diluted solution contains nine grams of sodium hydroxide per hundred cubic centimeters.

The amount extracted depends, to a small extent, on the duration of the mercerization, increasing by about 0.2 per cent between half to one and one half hours. It is more dependant on the temperature and diminishes by about two per cent when the temperature is raised from 12 to 27 degrees C.

To determine alpha cellulose, three grams of the material are mercerized at a temperature of 18 degrees C. with twenty cubic centimeters of 17.5 per cent by weight of sodium hydroxide. After a period of one half hour has elapsed, eighty cubic centimeters of a five to six percent by volume sodium hydroxide solution are added, and the residue after filtration is washed with fifty cubic centimeters of an eight to nine per cent by volume sodium hydroxide, and then with water, acetic acid and water. It is then dried and weighed. Hemicellulose may be determined in an aliquot portion of the filtrate by oxidation with the aid of chromic acid. It is proposed to redefine alpha cellulose in accordance with this method of determination. Papierfabrikant, 1926, 24, Fest und Ausland Heft, pages 66 to 71.

Paper Making Machine

THE paper making machine, which is shown in the accompanying illustration and which is patented in United States Patent, No. 1,600,689, consists of a rotary cylinder or drum which is combined with a vat and an inlet port for the



introduction of the paper stock. As can be seen from the figure, the cylinder is made in a number of chambers by means of partitioning walls. An endless wire screen is provided and travels over the cylinder. Means are provided for withdrawing the water from the cylinder compartments above the surface of the paper stock in the vat prior to its leaving the cylinder.

By-products in Pulp Making

IN THE manufacture of pulp, it is not only important that the chemical and technical conditions be so well understood that the process is carried out with the maximum efficiency and the highest yield and best quality of product obtained, but it is also important that the proper attention be paid to the by-products and their recovery. It is not only necessary from the common economical standpoint to work up all the by-product into marketable form, but it is also of special interest to the mills to give this matter their careful attention because of the returns that are brought from the sale of these by-products.

As far as the sulphate pulp mill is concerned, it is necessary that the sodium hydroxide employed be reworked from the waste liquors on purely economical grounds. In addition thereto, there is the by-product which consists of approximately fifty per cent of the weight of the wood in the form of organic substances. This can either be burnt or else converted into valuable products. As a general rule, the waste liquor at the end of the digestion contains the following ingredients:

Water	79.89 per cent
Organic matter	11.98 per cent
Sodium carbonate	2.79 per cent
Sodium oxide	2.30 per cent

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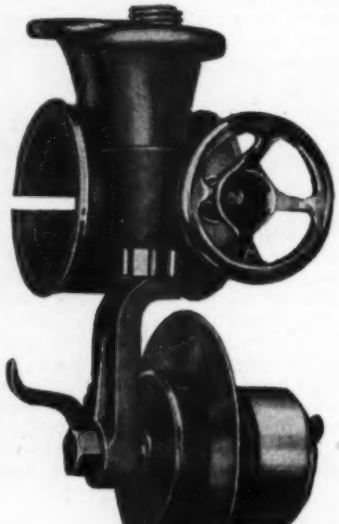

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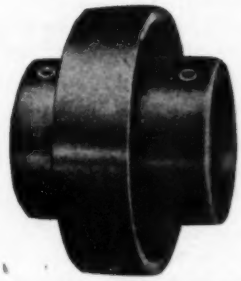

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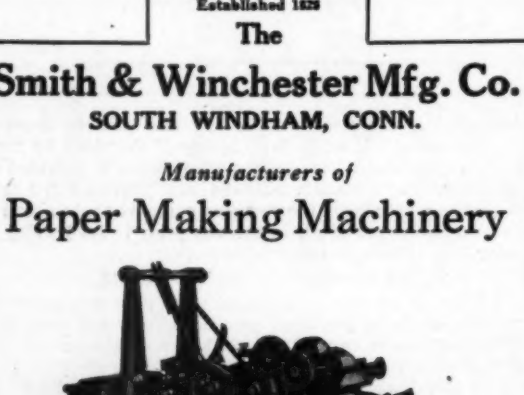

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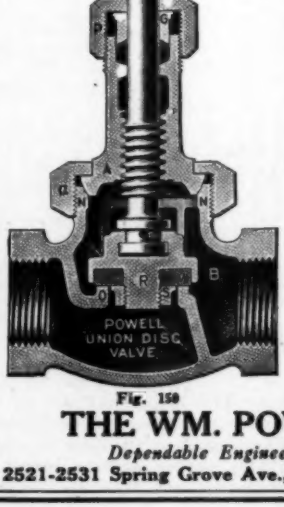

Fig. 150

Powell Composite Disc Valves

are furnished with bronze body and trimmings or iron body with bronze trimmings.

Bronze valves with union outlets are obtainable for both hot water and steam heating installations.

Discs are interchangeable with all standard vulcanized discs. However, we recommend Powell.

Descriptive circular on request.

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Calcium hydroxide	0.47 per cent
Sodium sulphate	1.26 per cent
Sodium sulphite	0.18 per cent
Sodium sulphide	0.78 per cent
Sodium thiosulphate	0.16 per cent
Sodium chloride	0.19 per cent

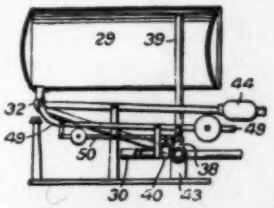
A discussion is then given of the various methods that are available for the manufacture of valuable products, such as turpentine oils, sulphate oil, liquid rosin, pine oil, methanol and the like from this waste liquor.

The author also discusses the recovery of by-products from the manufacture of sulphite pulp, particularly the working up of the waste liquors to produce alcohol, of which he says the yields are between 42 and 46 liters of spirit per ton of cellulose processed. The recovery of fusel oil, formic and acetic acids, aldehyde, acetone and furfurol is also described.

For further details see Suomen Paperi-ja Puutavaralehti, 1926, numbers 7 and 9.

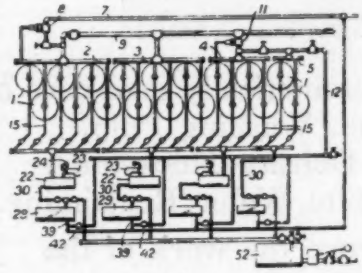
Drying Device on Paper Making Machines

IN A steam heating system for the drying rolls of a paper making machine, comprising a number of steam supplies separately serving corresponding groups of drying rolls, the pressure and temperature of the steam supplied to the various groups are independent of one another, the available heat of the steam supplied to each group being substantially wholly utilized in that group.



The headers (2) and (3) supplying steam to the rolls (1) at the dry end of the system are supplied either from the boiler through a pipe line (7) through a reducing valve (8) or from a low pressure (9), for example from the machine engine exhaust, the line (9) supplying through a reducing valve (11) the heaters (4) and (5) at the wet end of the machine.

Alternatively, the header (5) may be intermittently supplied by a line (12) with boiler steam that has been used to force condensed steam from traps (29) provided for draining the drying rolls (1). The condensed steam is led from the rolls (1) by a pipe (15) to a receiver (22) from which air is allowed to escape through a water trap (23) and thermostatic valve (24), the water leaving the receiver (22) by a pipe (30) to a steam trap (29) whence it is forced by boiler steam into a common high pressure receiver (52).



The trap (29) is of the tilting direct return type operated at boiler pressure, steam being supplied thereto through a pipe (39) and valve (38) and exhausted therefrom through the pipe (39), valve (40) and check valve (42) and is mounted upon bearings (43) so as normally to be held horizontal by a weight (44), levers (49) and (50) being provided for actuating the valves (38) and (40) upon tilting movement of the trap. British Patent, No. 251,824.

Chemistry of Sulphite Cooking

ADDITIONAL experiments have shown the correctness of the conception that the sulphite digestion process takes place in two stages. The addition of sulphurous acid to an unsaturated compound takes place very rapidly at temperatures up to 100 degrees C. The hydrolysis of the lignin-sulphonic acid carbohydrate formed is carried out in the second stage of the digestion and requires a certain concentration of hydrogen ions in the digestion liquor. The progress of the formation of sulphonic acid can be followed through by studying the composition of the wood residues, after variant periods of digestion have elapsed. The many experiments carried out on this subject indicated that the lignin was sulphonated early in the digestion process.

Experiments, which were made for the purpose of bringing the sulphonated lignin into solution by the action of a one per cent solution of hydrochloric acid, have shown that sixty per cent of the lignin was hydrolyzed within an hour's time while after a period of eight hours had elapsed eighteen per cent of the lignin sulphonic acid remained undissolved.

It therefore appears that a larger portion of the lignin sulphonic acid is easily hydrolyzed. The author states that this phenomenon is to be led back to a polymerization of the lignin sulphonic acid complex, and furthermore it should also be held that the well known technically and much feared black cooking is due to the same phenomenon.

According to this theory, lignin is present in the unbleached pulp not as such but in the form of a "solid" ligninsulphonic acid.

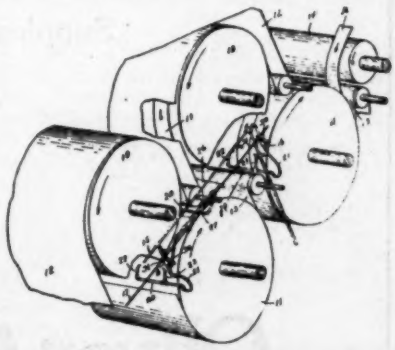
If the second half of the sulphite digestion is carried out as an hydrolytic process, then a knowledge of the chosen hydrogen ion concentration is of particular importance. Those methods which employ indicators are particularly important. The potentiometer method is also of importance. Experiments made with the constant hydrogen atmosphere method, according to Michaelis, gave inaccurate results, for the electrodes were poisoned by the formation of sulphuretted hydrogen. The author used the raw sugar inversion method with good results.

A series of three digestion experiments with calcium, magnesium and ammonium as the bases were carried out and observation was made of the settled digestion liquor with respect to its hydrogen ion concentration. It was found that at the beginning of the digestion a very marked reduction in the concentration of the hydrogen ion took place, which is held to be due to the addition of the sulphurous acid to the lignin complex. Then as the digestion proceeds, the concentration of hydrogen ion increases, an increase which is very great towards the end of the digestion. This increase is held to be due to the fact that the lignin sulphonic acid which goes into solution is stronger than the consumed sulphurous acid. The sulphuric acid, which is also formed during the course of the digestion, also helps to increase the acidity of the liquor.

As far as the hydrolysis of the carbohydrates is concerned, it is found that at the begining of the digestion, more pentosans than hexosans go into solution. It is only towards the end of the digestion that more hexosans go into solution, and at this point it is probable that the cellulose portion is also attacked. It is also found that it is practically immaterial which base is employed, that is whether ammonium, calcium or magnesium salts are used. Svensk Kemish Tidskrift, number 7, volume 38, 1926.

Paper Making Machine

THE illustration shows a type of paper making machine which is patented in United States Patent, No. 1,601,387. It consists in a combination of upper and lower rolls for the paper web, and means, including nozzles which are placed in front of these rolls and arranged to deliver blasts of air directed in the direction of travel of the lead strip of the paper web and against the opposite side edges of the lead strip ahead of the nozzles. This acts to lift the lead strip free from contact with its supporting roll.



Sulphite Tissue Paper as a Raw Material for Nitrocellulose

TISSUE paper which is made from sulphite pulp purified by boiling with alkali and bleaching was compared with a cotton tissue paper as a raw material in the manufacture of nitrocellulose for use in making celluloid. The sulphite paper

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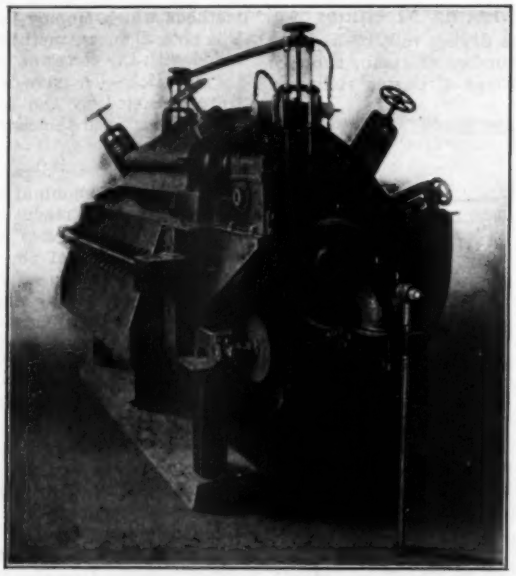

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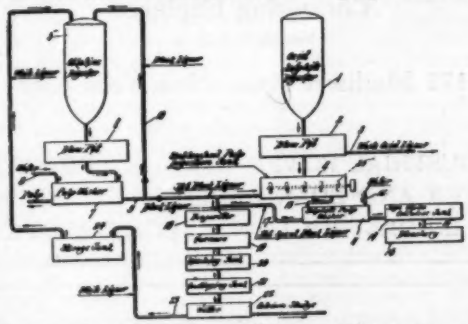
contained 92.7 per cent of alpha cellulose as against 98.8 per cent for the cotton paper. The sulphite paper was also denser and stronger than the cotton paper. When nitrated under similar conditions, the relative viscosities of the nitrates in ether-alcohol were: for the sulphite paper 41.2 and for the cotton paper 52.0 while a purified cotton wool gave a nitrate of viscosity 609.

The beta and gamma cellulose present in the sulphite paper are nitrated and remain in the nitrocellulose. The nitrates of these lower celluloses are soluble in ether-alcohol and camphor-alcohol giving solutions of low viscosity. Their presence in the film of celluloid modify the gel structure in the direction of discontinuity and the tensile strength and elongation are decreased. They do not adversely affect stability. The tenacity of films made with optimum camphor contents were: sulphite tissue 4.72 kilograms per square centimeter; cotton tissue, 6.18; purified cotton wool, 8.24. There is no fundamental obstacle to the use of suitably purified sulphite pulp for the manufacture of celluloid; the alleged low yields on an industrial scale can probably be easily overcome by improvements in the quality of the paper and in the nitrating agent. Cellulose Industry, Tokyo, 1926, volume 2, pages 175-179.

High Resistant Cellulose Pulp

THE accompanying illustration shows an installation which is patented in United States Patent, No. 1,602,553, and which is used for the manufacture of a pulp which contains



a high proportion of resistant cellulose. The process consists essentially in the treatment of sulphite pulp, which is made in the sulphite part of the plant, with the alkaline black liquor that is recovered from the alkaline digester. As can be seen from the figure, the unbleached sulphite pulp is treated in a cylindrical vessel, provided with a stirring apparatus, with the hot black liquor which comes direct from the soda digester. The sulphite pulp is then washed and then sent to the bleachery. The waste black liquor is sent to the customary recovery plant and its values are there recovered.

Sizing Quality of Paper and Air Humidity

IT IS known that the sizing quality of paper under normal air humidity decreases from thirty to seventy per cent with the increase in the humidity. This depends partially on the fact that at high atmospheric humidities, the ink is slowly diluted and therewith its action on the paper is prolonged, but it is also possible that the paper itself, which possesses an increasing proportion of hygroscopic moisture, exerts an increasing resistance to the penetration of the ink. Various investigations were carried out on this subject in the governmental testing bureau in Helsingfors, Finland, in which paper of various composition of different character of sizing and of different origin were tested in air containing anywhere from zero to one hundred per cent humidity.

It has been stated above that there is a decrease in the sizing quality of the paper when the humidity increases within the limit thirty to seventy per cent. But when tests are made with humidities in excess of seventy per cent and less than thirty per cent, then it is found that the curve takes an unexpected path. The sizing quality of the paper rises from a minimum at zero per cent humidity, then it falls slowly from thirty to seventy per cent but then it rises rapidly again beyond seventy per cent humidity. The path of the curve remains the same for various kinds of paper. The effect of the moisture in the paper must be taken into consideration in explaining this phenomenon. But when it is called to mind that the proportion of absorbed water at an air humidity increasing from zero to one hundred per cent amounts to approximately twenty per cent of the weight of the paper, it will be seen that the hygroscopic moisture in the paper cannot be held to be a direct cause for the increase and decrease manifested in the sizing quality. The hygroscopic moisture, moreover, does not increase in a ratio exactly proportional to the increase in the humidity of the air. Thus when a graphical study is made of this phenomenon, it will be found that the curve rises sharply at first, then the slope becomes less and finally the slope sharply increases again. In other words this curve is quite similar to the sizing quality curve.

The figures obtained for the sizing quality of the papers tested under these conditions remain practically identical in all cases. However, when the paper that is being tested is subjected to the action of moist air for several days, then values are obtained which are considerably higher than the normal sizing quality coefficients. However, the increase remains the same for all degrees of air humidity, so that the sizing quality curve retains its shape and the height of the curve above the X axis is increased. If such paper is again subjected to the action of dry air, then in spite of this treatment it still retains its high sizing quality. It therefore follows that the long treatment of the paper with moist air produces an irreversible increase in the sizing quality of the paper. Such a hardening of the paper is called moist-hardening. This phenomenon is well known in practice and it is for this reason that paper is stored in moist cellars. It appeared to be of sufficient interest to make a quantitative study of this matter and after paper had been allowed to remain in contact with moist air over a period of twenty-eight days, it was found that the maximum sizing quality of the paper had nevertheless not been reached. It is quite practical to increase the sizing quality of slightly sized paper by this treatment.

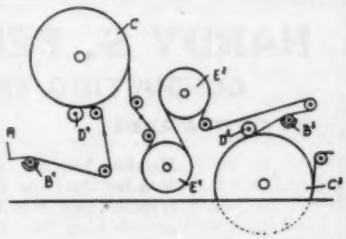
It is also known that the sizing quality of a paper is injured by exposure of the paper to the sun's rays. But it has been found that a paper which has been treated in this manner until its sizing quality has been almost entirely destroyed can have its sizing quality restored by this moist-hardening process.

In explaining this phenomenon, it cannot be held that a change takes place in the fibrous matter, for paper which has not been sized at all exhibits no tendency to assume any sizing quality when it has been exposed to the moist atmosphere in this manner. Hence, it follows that the only thing that can happen is a change in the character of the size. That the moisture in the air and in the paper are not solely responsible for this phenomenon can be concluded from the fact that a direct moistening of the paper accomplishes nothing. This phenomenon can be explained only by the fact that the sizing matter is chemically changed under the action of moist air.

For further information on this very interesting article, see Pappers-och Traevarutidskrift foer Finland, number 10, year 1926.

Double Finished Paper or Cardboard

THE machine which is shown in diagrammatic form in the accompanying illustration and which is patented in German Patent No. 433,123, is used for the purpose of producing a paper sheet or cardboard which has a smooth surface on both sides. The paper web or the like is led between suitable rollers and is then passed through a dry chamber. The particular feature of this invention lies in the fact that between two sets of rolls of the usual sort which are used for the production of a double finished paper, shown in the diagram as (B^1), (C^1), (D^1), (B^2), (C^2), (D^2), one or more drying cylinders, shown at (E^1), (E^2) are inserted.



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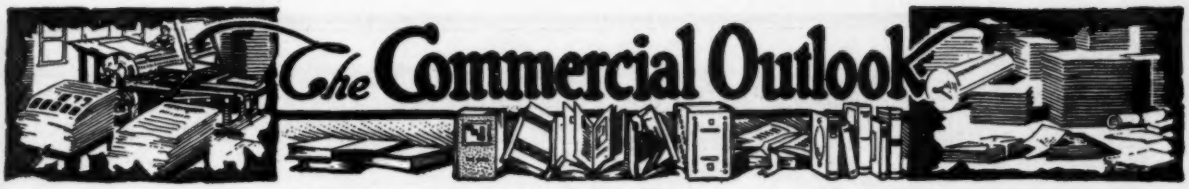

New York, November 1, 1926.

THE market for paper is quite active. On all sides one hears reports of a very satisfactory demand for paper of various kinds, of consumers buying freely not only against immediate needs but also in many cases to cover forward requirements, and of a gradual increase in business. Manufacturers and merchants in some instances state that October and September were the busiest months they have experienced this year, if not in a much longer space of time, and there appears no doubt that most paper and board mills all over the country are operating at present on a larger scale than has been the case in a lengthy period.

There are conditions within the industry, and in the consuming fields, which are not all to the liking of paper producers and dealers, but these unfavorable features are easily offset by the marked increase in demand for paper and the generally active position of the market. Prices all through the list on practically all classes of paper and board are steady—there is firmness shown in many grades, and the tendency except in rare cases is upward unmistakably. The market tone is fully stabilized, manufacturers are exerting every effort to keep prices steady and therefore are not attempting to advance quotations except in instances where production costs or market circumstances fully warrant, while appreciating the stability of prices, is serving as an incentive to consumers to buy and thus leading to bigger business. The outlook for continued good business during the remainder of this year and into the new year is bright. Manufacturing activity in various industries is on a wide scale, and there has been decided improvement in retail business which should register further expansion as the holidays draw nearer. This obviously means a large consumption of paper of various kinds, and the manner in which many consumers have bought for delivery over the next couple of months indicates they expect excellent business.

Production of paper in the United States showed a fair increase in August as compared with the preceding month, according to the monthly statistical summary compiled and issued by the American Paper and Pulp Association in cooperation with affiliated organizations. During August the total output of paper and board reached 569,577 tons, recording a gain of 5 per cent over the production of 540,660 tons in July, as reported by identical mills, following a loss of 5 per cent in the July output as contrasted with June. August production also compared with 572,968 tons produced in June, 555,696 tons in May, 573,528 tons in April, 599,719 tons in March, 523,657 tons in February, and 548,820 tons in January. Stocks of paper at mills increased slightly during August, amounting to a total of 251,479 tons of all grades at the end of that month, against 246,560 tons at the end of July. Shipments from mills aggregated 562,193 tons in August, against 550,989 tons in the preceding month.

Production of newsprint in the United States in September amounted to 136,167 tons and shipments from mills to 135,300 tons, according to the monthly report of the News Print Service Bureau. Production in Canada amounted to 161,287 tons and shipments to 162,740 tons, making a total United States and Canadian production of 297,554 tons and shipments of 298,040 tons, compared with 301,804 tons produced and 296,595 tons shipped in the preceding month. The newsprint mills also made 1,409 tons of hanging paper in September, 227 tons of which were made in Canada. During September, 16,525 tons of newsprint were made in Newfoundland and 1,345 tons in Mexico, so that the total North American production for the month amounted to 315,424 tons. For the first nine months of 1926 the Newfoundland output of newsprint totaled 133,590 tons, an increase of 145 per cent over the same time of 1925, and the Mexican output was 9,572 tons, a gain of one per cent compared with last year. During September the U. S. mills operated at 95.7 per cent of rated capacity, and the Canadian mills at 99 per cent. The U. S. mills made 12 per cent more newsprint in the first nine months of 1926 than in the same period of 1925, and the Canadian mills made 24 per cent more. The combined production of the United States and Canadian mills in the first nine months of this year totaled 2,640,747 tons, was 18 per cent more than in the same period of 1925, when the output reached 2,242,668 tons. Stocks of newsprint at U. S. mills totaled 18,741 tons at the end of September, and 14,684 tons of Canadian mills, making a combined total of 33,425 tons, which was equivalent to 2.7 days' average production.

There was a sharp increase in production of paper board in the United States in August as compared with the preceding month, according to the monthly report compiled and issued by the Department of Commerce in Washington. During August the board mills of the country produced a total of 223,693 tons of board, contrasted with 209,961 tons in July. Mills produced at 113.4 per cent of their rated capacity in August on the five-day working week, against 111.5 per cent in the preceding month. Board output in the first eight months of this year amounted to 1,668,508 tons, contrasted with 1,489,173 tons in the corresponding time a year ago. Orders received for board in August aggregated 210,849 tons, compared with 211,907 tons in July, while unfilled orders held by mills at the end of August called for a total of 109,725 tons, against 122,667 tons at the end of July, and stocks of board at mills at the end of August totaled 61,316 tons, contrasted with 60,630 tons a month previous. Shipments of board from mills in August amounted to 224,193 tons, contrasted with 207,994 tons in the preceding month. Board mills consumed a total of 217,516 tons of waste paper in August, against 200,927 tons in July, and had stocks amounting to 199,223 tons on hand at the end of August, compared with 147,523 tons at the end of July.

An important development in the market is the announcement that the contract price of newsprint for the calendar year of 1927 will be unchanged from the basis prevailing throughout the current year, the price being $65 a ton or 3.25 cents per pound f.o.b. mills for standard newsprint in rolls. This was announced by the International Paper Company, and it is understood the other large manufacturing companies in the United States and Canada will adhere to this contract price. This sets at rest rumors that the price of newsprint would be revised to apply to contracts for next year. The newsprint market is very firm. Publishers are commencing to arrange their 1927 contracts and the busy season of the year for the executive staffs of the producing organizations is at hand. Consumption of print paper is keeping up on a very high level; in fact, it is probable a new tonnage record is being established at the present time.

Kraft paper is in excellent demand and most mills are sold up for a considerable period ahead. It is reported, for instance, that southern manufacturers have disposed of their output for the balance of this year. Prices are firm and tend upward, though no further actual changes have been noted. Tissue is in good call and seeking a gradually higher price level.

The movement of book paper into consuming channels continues on a heavy scale. Publishers are using up tonnage in a consistent way and in big volume and the market exhibits a firmer undertone than in a long time. Reports say, in fact, that nearly all mills are well sold ahead, including many of those who cater especially to transient buyers.

Fine papers are in moderately good demand; quotations are steady following the recent decline of about 10 per cent in wood grades, and business is showing a gradual expansion.

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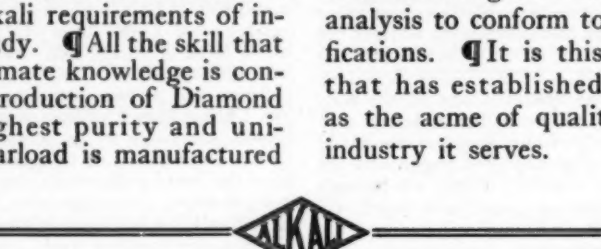

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Papermaking Rags

The market situation in papermaking rags continues largely in favor of buyers. There has been little or no expansion of demand in the last several weeks; as a matter of fact, the demand has subsided for some classes of rags rather than increased, which is somewhat unusual for this time of the year, when ordinarily paper manufacturers are absorbing rag supplies in large amounts. Prices have not changed to any important degree, yet such revisions as have been noted in market levels have been, almost without exception, in a downward direction.

The quiet position of papermaking rags, not only at the moment but for a long time past, can be attributed to more than to any other cause the preference shown by numerous buyers of fine papers for sulphite bonds and ledgers than for paper of rag content. It is not exactly a preference on the part of the printer or consumer but a matter of price—the cost of sulphite papers being so far less than rag-content papers that in a great majority of cases buyers are taking the cheaper quality or sulphite paper. It is asserted that instances exist where certain fine paper mills in the New England district which formerly consumed some 200 to 300 tons of rags a day in making bond and ledger papers are today not using any more rags than this in a month. In nearly every case, individually and collectively, paper mills are consuming nothing like the tonnage of rags that they did a few years ago, and this situation has become so accentuated that the rag market is feeling it to a very pronounced degree.

Roofing rags, which is the one class of stock that has moved in something approaching normal volume this year, has quieted perceptibly in the last couple of weeks. Felt manufacturers for a time early in the Fall were buying quite freely but evidently they have covered their requirements for a while and now manifest little desire to acquire additional supplies. It is reported that demand for roofing paper has decreased, and this doubtless accounts in part for manufacturers halting their purchases of rags. Prices have eased off slightly to where market levels are approximately $2 per ton below the high figures reached recently, and the tendency is downward with the probabilities lower prices will be witnessed before the decline is checked. Dealers quote No. 1 domestic roofing stock at 1.75 cents a pound and No. 2 stock at around 1.45 cents f.o.b. shipping points, while foreign dark colored cottons are reported available at 1.65 and 1.70 cents a pound ex-dock New York and foreign linsey garments at 1.80 cents.

The situation obtaining in old white rags and thirds and blues really is serious. It can be stated that there has been no worthwhile movement of these grades into consuming channels all of this year. Paper manufacturers have bought only in spotty fashion and in a tonnage far under their usual purchases. These rags consequently have accumulated, and an ill feature is that most of the supply dealers hold in stock has been bought at higher prices than can now be obtained in sales to consumers. Prices are more or less nominal, but No. 1 repacked whites can be secured by paper mills at 6 to 6.50 cents a pound at dealers' shipping points, while No. 2 repacked can be bought freely at 3 to 3.25 cents. Repacked thirds and blues are offered by dealers at 2.40 to 2.60 cents a pound at shipping points, and rough packing at 1.75 cents and less.

Prices of new cuttings have sagged a bit more and most descriptions now are on a slightly cheaper quotational level. The demand for new rags is at best narrow, papermakers buying merely to fill urgent wants and apparently not needing anywhere near usual amounts. It is declared production of cuttings is well below normal, but this is offset by the limited demand, though dealers contend that should demand get back to anything approaching normal the likelihood is values would improve sharply.

No. 1 white shirt cuttings are quoted at about 11.50 cents a pound at shipping points and it is probable some purchases have been effected under this price. Fancy shirt cuttings are available to paper mills at 5.75 cents at dealers' points, washables at 4.75 cents, white lawns at 9.25 cents, blue overall cuttings at 7.50 cents, light silesias at 7.50 cents, light flannelettes at 9.25 cents, and bleached canton flannels at 9.50 cents.

In foreign rags, about the only movement of consequence recently has involved roofing grades and demand for these has subsided. Fiber mill grades are neglected and the better qualities of papermaking grades are in very slim demand. Prices abroad are fairly well maintained, with the result importers here continue to ask about the same figures as previously.

Average quotations f.o.b. shipping points and ex-dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	11.50-12.00
White shirt cuttings, No. 2	8.00- 8.50
Fancy shirt cuttings	5.75- 6.00
Washables, No. 1	4.75- 5.00
Unbleached muslins	11.25-11.50
White lawns	9.25- 9.50
Overall cuttings, blue	7.50- 7.75
Black silesias	5.00- 5.25
Light flannelettes	9.25- 9.50
Canton flannels, bleached	9.50- 9.75
Canton flannels, unbleached	8.50- 8.75
Shoe cuttings, bleached	10.00-10.25
Shoe cuttings, unbleached	9.25- 9.50
Light silesias	7.50- 7.75
O. D. khaki cuttings	5.50- 5.75
Mixed khaki cuttings	4.75- 5.00
Corduroy cuttings	4.00- 4.25
Cottonade cuttings	4.00- 4.25
Linens, No. 1 white, foreign	13.00-13.50
Light prints, foreign	2.75- 3.00
Old Stock—	
Whites, No. 1 repacked	6.00- 6.50
Whites, No. 2 repacked	3.00- 3.25
Whites, house soiled	2.00- 2.25
Whites, street soiled	1.85- 2.00
Lace curtains	6.00- 6.25
Thirds and blues, rough	1.65- 1.85
Thirds and blues, repacked	2.40- 2.60
Black stockings	4.00- 4.25
Cotton canvas, No. 1	5.25- 5.50
White cotton batting	3.20- 3.40
Roofing, No. 1	1.70- 1.80
Roofing, No. 2	1.40- 1.50
Linsey, garments, foreign	1.75- 1.85
Dark colored cottons, foreign	1.60- 1.70
Blue linens, foreign	4.00- 4.25
Gray linens, foreign	4.25- 4.50
White linens, foreign	8.00- 8.50
Light prints, extra, foreign	1.75- 2.00

Rope and Bagging

Both old rope and bagging are holding moderately steady in price, although it cannot be said there is any brisk demand from paper mills for either raw material. In fact, consumers are purchasing in a very guarded manner, coming into view when actually in need of supplies but limiting their orders to quantities sufficient to satisfy direct needs. It is the contention of dealers that were demand to expand just a little values would stiffen owing to the comparatively restricted supplies coming forward from producing sources. This is said to be particularly true con-

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MITTS & MERRILL GRAVITY FEED SHREDDER

Reduces Paper Stock

Magazines, books, old paper and boxboard, frozen or dried pulp laps run through the Mitts & Merrill Gravity Feed Shredder are reduced to particles which hydrate readily when put into the beaters.

Built in six sizes with spouts ranging from 18" to 45" wide

Reduces Costs

Because shredding in the Mitts & Merrill Gravity Feed Shredder expedites hydration in the beaters there is considerable saving made in power. Thus we see that the shredder here illustrated reduces costs while it is reducing paper stock.

We will be glad to furnish details upon request.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 372 and 373 in the 1926 Paper and Pulp Mill Catalogue

MITTS & MERRILL 1013 Tilden St. SAGINAW, MICH.

cerning old manila rope, domestic supplies of which appear unusually light, though there seems to be considerable lots available abroad. Paper manufacturers continue to show marked preference for domestic rope, however, and are paying much higher prices for such material than for the imported product.

Five cents a pound f.o.b. dealers' shipping points is the price most often mentioned in the trade as prevailing on No. 1 domestic old manila rope, and it is possible some little buying is being done slightly under this figure or at an eighth to a quarter of a cent per pound less. On the other hand, foreign No. 1 rope is available at 3.75 to 4 cents ex-dock New York and is finding few buyers even at these relatively low rates. Mix strings are steady at 1.50 to 1.75 cents a pound and sisal strings are bringing 2.25 to 2.50 cents at points of shipment.

No. 1 scrap bagging is quoted around 2.15 cents a pound f.o.b. dealers' shipping points and in some instances paper mills are granting 2.25 cents for extra good packing. Roofing bagging is selling at 1.30 to 1.40 cents a pound. Gunny bagging is quieter but steady in price at about 3.75 cents a pound for No. 1 domestic grade.

F.o.b. shipping point and ex-dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	3.65-3.80
Gunny, No. 1 foreign	3.00-3.25
Scrap bagging, No. 1	2.10-2.25
Roofing bagging	1.30-1.40
Wool tares, heavy	3.75-4.00
Wool tares, light	3.50-3.75
Manila rope, No. 1 foreign	3.75-4.00
Manila rope, No. 1 domestic	4.75-5.00
Sisal strings	2.25-2.50
Mixed strings	1.50-1.75

Old Paper

The market for old paper has developed an easier undertone, and prices have moved slightly lower on some grades, more especially the cheaper qualities. After buying on an active scale, and, in doing so, pushing the market upward, board manufacturers and other consumers have let down in purchasing, and, as usually is the case when demand subsides, values quickly reacted—to a slight degree at any rate.

Old No. 1 mixed paper is now quoted at 55 to 65 cents a hundred pounds f.o.b. shipping points, and folded news at 60 to 70 cents. Prices of these grades in the Middle West are well above those prevailing in the East and it is likely higher than 65 cents for mixed and 70 cents for news is being paid in some instances in the West. Common mixed is quoted at 45 to 50 cents at shipping points.

A feature of the market is the firmness of prices of old kraft paper. Dealers in the East are demanding 2.35 cents per pound for No. 1 kraft and frequently above this level is quoted. Shavings also display a steady price tone and, if anything, market levels are a bit up to where 3 cents or more usually is quoted on No. 1 soft white shavings and 3.65 cents on No. 1 hard white shavings at shipping points. Ledger stock is on a rather wide price range, some qualities of packing being quoted at 1.75 cents a pound, whereas other packings are available down to 1.45 cents. Heavy No. 1 books and magazines are bringing 1.10 to 1.25 cents a pound at dealers' points.

The following are quotations named by dealers f.o.b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	3.50-3.75
Hard white shavings, No. 2	3.00-3.25
Soft white shavings	2.90-3.15
Colored shavings	.90-1.00
Heavy book, No. 1	1.10-1.25
Crumpled book, No. 1	.90-1.00
Ledger stock	1.45-1.75
Kraft, No. 1	2.20-2.40
Manilas, No. 1	.90-1.00
White blank news	1.70-1.80
Overissue news, No. 1	.70- .80
Folded news	60- .70
Sulphite mill wrappings	.75- .85

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Rosin Size, Satin White, Clays, Fillers
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GATTI Paper Stock Corporation
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All Grades of Rags and Paper Stock, New Wrapping Paper, Box Board and Cordage

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STANDARD BLEACHING POWDER

Liquid Chlorine
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Bleached and Unbleached
SULPHITES
KRAFT PULPS

Foreign and Domestic
GROUND
WOOD

PERKINS-GOODWIN CO.
NEW YORK
33 West 42nd St.

PAPER

PRINTING PAPER
OF
EVERY DESCRIPTION

Mixed paper, No. 1	.55- .65
Common paper	.45- .50

Pulp Wood

Prices of pulp wood are firm and the market is moderately active, grinders displaying a good deal of buying interest and contracting for supplies in a fairly large way. No definite changes are recorded in quotations but it appears prices are tending to harden.

Exports of pulp wood from Canada, practically every bit of which is shipped to the United States, have been smaller this year than in 1925, the total for the first nine months of 1926 amounting to 1,112,764 cords, valued at $11,064,663, contrasted with 1,185,495 cords of a value of $11,775,969 exported in the similar period a year ago.

Mechanical Pulp

Demand for mechanical pulp is developing in usual volume along routine lines and yet the market displays a somewhat quiet tone insofar as current business is concerned. There is, however, a large movement of supplies against contracts and back orders, which together with the fact producers are carefully conserving their output largely against their own requirements, leaves little ground wood for sale in the open market. Consumption obviously is heavy since newsprint mills are using ground wood in exceptionally big tonnage, and it is reported most grinders who cater to transient buyers are sold up for a month or more ahead and have scant supply to offer other than to regular customers.

Available supplies of Scandinavian ground wood are light, which is to say light in the respect prices quoted from abroad are so well above our market levels here importers are not bringing in shipments from abroad. There is a probability with the strike in the pulp mills of Norway settled the market in Europe may ease down to nearer prevailing levels here, but this has not yet occurred and most quotations from Scandinavia are equivalent to about $38 to $39 a ton as a minimum, landed New York or other American Atlantic ports. Domestic ground wood is quoted at around $32 a ton f.o.b. pulp mills, and quotations from Canada range generally between $28 and $30 a ton, depending on the air-dry test and the freight to consuming centers.

Production of mechanical pulp in the United States in August showed a decline, amounting to 75,140 net tons, compared with 84,628 tons in July. Mill stocks decreased sharply from 146,216 tons at the end of July to 126,295 tons at the end of August. Producing mills consumed 87,377 tons in August, against 90,086 tons in July.

Chemical Pulp

There is a consistently good demand for domestic chemical wood pulp; activity in the market is developing in a fairly broad way, mills are operating at a good percentage of maximum capacity, and prices rule quite steady. There is, however, little actual change to report in the situation generally. The level of values is about stationery, although the tendency seems on the up-side, and manufacturers almost without exception insist on the full figures quoted when negotiating sales.

Rumors that an advance in bleached sulphite prices was contemplated have been denied, leading producers stating they expected to keep quotations firm on present levels through at least the rest of this year. The most popular qualities of No. 1 bleached sulphite are selling at 4 to 4.25 cents per pound f.o.b. pulp mills, but some grades range up to 4.50 and 4.75 cents, being in line with foreign pulp of the same classification. No. 1 strong unbleached sulphite is selling at 3 cents a pound or close to that figure at pulp plants, while book grade sulphite is quoted at 3.25 to 3.50 cents. Bleached soda pulp is quoted at 3.75 to 4 cents a pound, and No. 1 kraft at 2.90 to 3 cents at producing mills.

Manufacturers in the United States produced a total of 102,461 net tons of chemical pulp in August, compared with 107,643 tons in July and 108,513 tons in June. Stocks at pulp mills at the end of August aggregated 21,206 tons of all grades, against 22,358 tons at the end of July.

Quotations f.o.b. pulp mills are as follows:

Bleached sulphite	4.00-4.75
Easy bleaching sulphite	3.20-3.40

"Distinguished for its high test and uniform quality."

Soda Ash

Caustic Soda

Bicarbonate of Soda

MICHIGAN ALKALI CO.

General Sales Department

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SALT CRYSTALS

A GOOD product is the sum of good materials.

As to your salt—you make no mistake when you fill your requirements with International. Here is a quality product, mined and refined by the most scientific processes.

International service is as satisfactory as the product. The two together relieve you of salt worries.

INTERNATIONAL SALT COMPANY, Inc.
475 Fifth Avenue, New York

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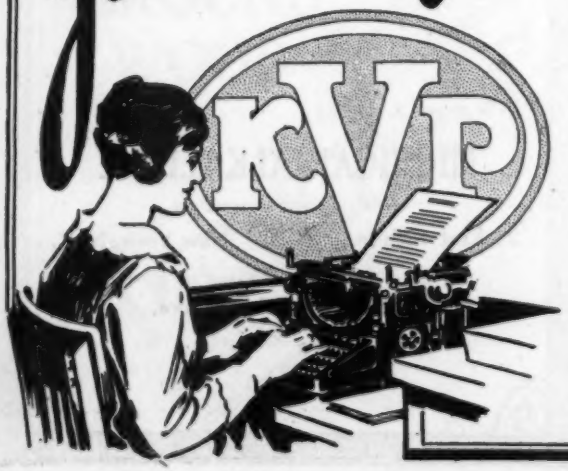

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KALAMAZOO VEGETABLE PARCHMENT CO.
KALAMAZOO, MICHIGAN

New Papers

Writing—	
White rag	15-40
White sulphite	10-30
Colored rag	15-40
Colored sulphite	9-30
Ledger—	
White rag	16-40
White sulphite	11-30
Colored sulphite	10-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	8-30
Colored sulphite	8-30
Colored rag	15-40
Book—	
No. 1 S. & S. C.	6.50- 8.00
Machine finished	6.25- 8.00
English finished	6.25- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.50-15.00
Newsprint—	
Rolls, contract	3.25- ....
Rolls, transient	3.50- ....
Sheets	3.75- 4.00
Side runs	4.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.70- .80
No. 2 white, 24x36	.65- .75
No. 1 manila, 24x36	.65- .75
Kraft	.90- 1.00
Wrapping—	
No. 1 Kraft	6.00- 6.50
No. 2 Kraft	5.25- 5.50
Southern Kraft	4.75- 5.00
Boards—	New York and Chicago
Solid news	47.50-50.00
Straw	52.50-57.50
Plain chip	42.50-45.00
White coated chip	55.00-60.00
Manila coated chip	52.50-57.50
Binder's board	70.00-75.00

Chemical Pulp

(Continued from page 1451)

Unbleached sulphite, No. 1 strong (new grade)	2.90-3.10
Unbleached sulphite, No. 1 book	3.25-3.50
Soda pulp, bleached	3.75-4.00
Mitscherlich, unbleached	3.25-3.50
Kraft, No. 1	2.90-3.10
Screenings, refined	1.40-1.60

Chemicals

Consumers are buying casein solely to cover urgent requirements and the market consequently exhibits a rather quiet undertone. Prices nevertheless continue high, with domestic casein quoted at 15.50 to 17 cents per pound and the imported article at 16.50 to 17.50 cents, duty paid. Bleaching powder is steady in price at 2 to 2.40 cents a pound in large drums f.o.b. works. Caustic soda is selling at 3.10 to 3.15 cents a pound at works, with spot shipments quoted 5 to 10 points higher, while soda ash is steady at 1.38 cents per pound in bags at shipping points. Demand for brimstone is reported fairly active and quotations are maintained at $18 to $19 a long ton, in bulk, f.o.b. mines.

Average quotations are as follows:

Alum, lump ammonia	3.50- 3.75
Alum, lump starch	3.75- 4.00
Blanc fixe, powder	4.25- 4.50
Bleaching powder	2.00- 2.40
Brimstone (long ton, at mine)	18.00-19.00
Casein (duty paid)	15.50-17.50
Caustic soda, spot delivery	3.10- 3.25
China clay, domestic washed	8.00-10.00
China clay, foreign	13.00-20.00
Rosin, grade E	14.25-14.35
Satin white	2.00- 2.25
Soda ash, 58 per cent light (bags)	1.38- ....
Starch, papermakers', in bags	3.42- ....
Talc (ton)	16.00-18.00

Newsprint Paper Outlook

Royal S. Kellogg, secretary of the News Print Service Bureau, New York, was the principal speaker at the weekly luncheon of the Baltimore Advertising Club, held in Baltimore, Md., on Wednesday, October 27.

Discussing developments in production of newsprint paper, Mr. Kellogg said: "With newspaper advertising setting new high records and newsprint paper consumption nearing fifty-seven pounds per capita in 1926, the total use of newsprint in the United States will approximate 3,500,000 tons this year." Continuing, he said:

Those who know best estimate that the total volume of newspaper advertising this year will represent a value of at least $800,000,000, and there is a steadily increasing use of the printed page to link up the producers and consumers of the multitude of products required by a rising standard of living. Newspaper sizes and circulations continue to grow, the newspaper reader is getting more for his two or three cents than ever before, and the daily newspaper habit is firmly fixed. For these reasons it is not surprising that the United States uses nearly three-fifths of all the newsprint paper used in the world.

This is an age of speed in production and distribution, and only through back sights do we realize how fast we are moving today. Benjamin Franklin, as Postmaster General of the Colonies, listed twenty-five newspapers in America in 1771, and the Declaration of Independence in Philadelphia five years later did not find its first reprinting in Hartford, Conn., until eleven days after adoption. Now the circulation of the more than 2,000 English-language dailies in the United States exceeds 24,000,000 copies on Sundays and 34,000,000 on week days, while a photograph taken in Europe in the morning is reproduced here in the afternoon.

The application of power and invention to the satisfaction of human needs and desires has only just begun. Developments to come far exceed those which have already occurred. Centuries of progress are ahead for this old world. Paper has made universal education possible, and some way will always be found to produce the paper needed, despite the talk about shortages and substitutes. Most of the paper we use is made from wood, and if the land in this country which is fit for no other purpose is kept growing timber, we shall always have wood enough for every essential purpose.

S. W. Murphy, vice-president and general manager of the Riverside Fiber and Paper Company's mills at Appleton, Wisconsin, resigned his position, to take effect the first of November. Mr. Murphy has no definite plans for the future, but will undoubtedly take a well-earned rest. He succeeded his father, at the latter's death, in the management of these mills.

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PRICE & PIERCE, LTD.
17 East 42nd Street, NEW YORK CITY

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SELLING AGENTS
for Bathurst Pulp in the United States

Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

The B.D.C. QUALITY PULPS

HAFSLUND NORWAY — **"HAFSLUND BEAR"** Bleached Sulphite

F:HAGA — **"FORSHAGA"** Bleached Sulphite

KRAFT HURUM NORWAY SPECIAL — **"HURUM SPECIAL"** Extra Strong Kraft

KOOS BAC — **"BAMBLE"** Extra Strong Kraft

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Dealers in Wayagamack Kraft Pulp

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EASTERN AGENTS of Sulphite Pulp. Made by
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J. ANDERSEN & CO.
21 East 40th Street New York City

Importers of Chemical Pulps
BLEACHED AND UNBLEACHED

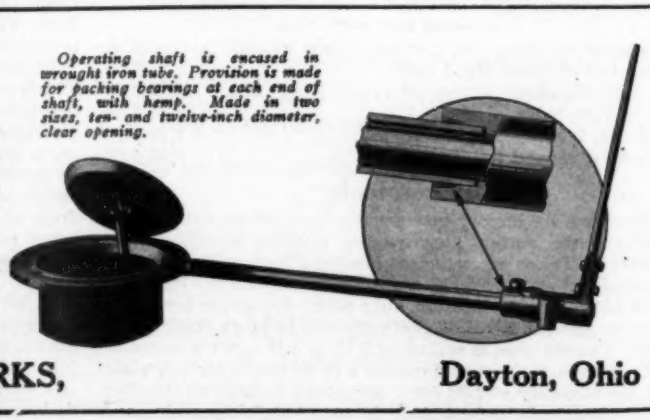
Agents for Kellner Partington Paper Pulp Co., Ltd.
Sarpsborg, Norway; Forshaga, and Edsvalla, Sweden

From the Outside—

No "fishing" and "poking" around the inside of the beater tub. This new dumping valve is constructed to operate from the outside of the tub. May be made either right or left hand by simply reversing two small bronze bushings.

Brass valve seat and lid are correctly proportioned. The valve in general is durable, easily operated and installed, and is positive in action.

Operating shaft is encased in wrought iron tube. Provision is made for packing bearings at each end of shaft, with hemp. Made in two sizes, ten- and twelve-inch diameter, clear opening.



DAYTON GLOBE IRON WORKS, Dayton, Ohio

EXPORTS

Exports of paper and board from the United States during August, 1926, amounted in value to a total of $2,216,819, registering a decrease of approximately $15,000 from the exports in the preceding month, but a gain of more than 10 per cent over the shipments in August last year, according to statistics compiled by the Paper Division of the United States Department of Commerce. Most classes shared in the slight decline in August in comparison with July of the current year, notable exceptions, however, being book and cover papers, wrapping papers, including greaseproof papers, boards and paper boxes and cartons. These items also showed an increase in comparison with the corresponding month last year, the heaviest gains occurring in shipments of box boards which increased 117 per cent, followed by boxes and cartons which rose by 30 per cent, and book and wrapping papers which were 20 per cent heavier. Other gains were registered in shipments of surface-coated and writing papers, which more than doubled, and in tissue and crepe papers, toilet paper, wall boards, envelopes and vulcanized fiber products.

Exports of newsprint in August totaled 2,411,461 pounds, valued at $151,548, contrasted with 3,115,857 pounds of a value of $138,419 exported in the similar month a year ago, the great bulk of which was shipped to the Philippines and Cuba. Shipments of book paper, not coated, amounted to 1,566,942 pounds, valued at $134,843, in August, against 1,322,739 pounds of a value of $149,555 in the same month of 1925.

Box board exports jumped from 1,785,563 pounds, valued at $74,968, in August, 1925, to 6,184,894 pounds of a value of $177,117 in August this year. Writing paper shipments in August last amounted to 836,414 pounds, valued at $138,108, contrasted with 384,064 pounds of a value of $80,385 in the same month a year ago. Wrapping paper exports were 2,657,904 pounds, valued at $181,238, against 2,218,035 pounds of a value of $165,633 in August, 1925.

Exports of paper base stocks from the United States in August were valued at $360,423, a loss of 5 per cent in comparison with the preceding month and of 25 per cent in comparison with August last year. Nearly two-thirds of the shipments consisted of rags and similar stocks, sulphite wood pulp ranking second in importance.

IMPORTS

Wood Pulp

Generally speaking, quotations on foreign wood pulp are maintained fully but instances have come to light recently where manufacturers abroad have shaded prices in certain cases to induce buyers to place orders. There is little question the coal miners' strike in England has upset, to some degree, the wood pulp situation in Europe; ordinarily England is a very large consumer of Scandinavian pulps, and since the coal strike has handicapped paper manufacturers in England they have let down in their purchases of pulp from Norway and Sweden, with the result the Scandinavian producers have more pulp to direct to the United States and other consuming countries. Because of this slight concessions in price have been made by shippers in Scandinavia in some cases, though such procedure is rather exceptional and the concessions have been very slight.

Mills in Sweden are well sold ahead. It is asserted they have disposed of by far a greater tonnage of pulp for 1927 shipment than ever before this early in the season. In certain instances paper manufacturers here have contracted for Swedish pulp as far forward as for shipment in 1928. There is virtually no pulp supply remaining in Sweden for shipment during the remainder of the current year, and indications are the great bulk of the available supply for first open water shipment next spring has been sold. The strike in the pulp mills of Norway was terminated on October 4 and production in that country now is in full swing. The strike began on August 16 and thus lasted a little more than a month and a half, during which period it is estimated the loss in production amounted to approximately 1,000 tons of chemical pulp and 1,300 tons of mechanical pulp, dry weight, daily.

American paper and board manufacturers have contracted heavily for sulphite for shipment from abroad next year. Not alone have purchases been made freely and in sizable tonnage in Scandinavia but buying of Finnish and German pulps has been on a large scale. Finland, it is stated, has marketed unusually big amounts of pulp in the United States, having quoted prices just a bit under other Europeans and thus obtaining a large part of the business placed. Swedish producers have been advising customers in this country recently that in all likelihood pulp quotations will be jacked up a bit the moment the coal strike in England ends as it is expected British consumers will come into view to make some big purchases of Swedish pulps. Another factor in the situation abroad, lately developed, is a scarcity of shipping space. Importers in New York are encountering much difficulty getting pulp shipped from Scandinavia at present, or for that matter securing freight space for the balance of this year, there being a shortage of steamers leaving pulp shipping ports and most of those scheduled to sail in the next few weeks being fully booked up with freight.

Imports of pulp into the United States keep up on a heavy scale. During August a total of 121,063 tons of chemical pulp was imported, valued at $7,868,333, compared with 115,572 tons of a value of $7,397,648 in the preceding month, according to official United States Government figures. August imports were larger than in any month this year with the single exception of June, when 122,238 tons were imported. August importations brought the total for the first eight months of this year up to 835,666 tons, giving a monthly average of 104,458 tons, contrasted with an average in the same period last year of 98,849 tons monthly. Imports of mechanical pulp in August amounted to 23,892 long tons, against 19,326 tons in July, bringing the total for the first eight months of the current year up to 162,645 tons, giving a monthly average of 20,330 tons, against 22,982 tons average in the corresponding time a year ago.

Prime bleached sulphite is quoted at around 4 cents per pound ex dock New York or other American Atlantic ports though the better qualities range in price up to 4.50 cents. No. 1 strong prime unbleached sulphite is selling at 3 to 3.10 cents ex dock in most instances, and easy bleaching sulphite at an average of 3.40 cents. Prime standard Swedish kraft is quoted at 3 to 3.05 cents on the dock at New York. Ground wood of Scandinavian origin is quoted from $38 to $41 a ton landed New York for dry pulp. These prices apply to purchases for shipment in 1927; generally a slight premium is demanded for shipments prior to the closing of navigation over the Baltic this year.

Current market quotations ex dock New York and receipts at the port of New York during October follow:

Bleached sulphite, No. 1	3.85- 4.50
Unbleached sulphite, strong, No. 1	3.00- 3.30
Unbleached sulphite, No. 2	2.85- 3.10
Easy bleaching sulphite	3.30- 3.50

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Mitscherlich unbleached, genuine	3.35- 3.60
Mitscherlich unbleached, ordinary	3.00- 3.15
Kraft, standard Swedish	2.95- 3.20
Ground wood, per ton (dry)	38.00-41.00

Bulkley, Dunton & Co., 850 bls. from Rotterdam, 4,720 Koenigsberg, 2,650 Sundsvall, 1,500 Hudiksvall, 2,875 Gefle, 135 Bremen, 5,675 Soderhamn, 1,000 Iggesund and 2,625 Stugsund; Tidewater Paper Mills Co., 6,557 bls. ground wood from Murray Bay and 14,053 Gaspe; A. P. W. Paper Co., 13,986 bls. from Sheet Harbor, N. S.; E. M. Sergeant Co., 2,174 bls. from Gothenburg and 475 Oslo; Castle & Overton, 406 bls. from Gothenburg, 7,999 Koenigsberg and 1,891 Bremen; Johanesen, Wales & Sparre, 1,098 bls. from Gothenburg, 300 Hernosand and 2,576 Sundsvall; International Acceptance Bank, 3,205 bls. from Hamburg; Lagerloef Trading Co., 549 bls. form Kotka, 311 Raumo and 36 Helsingsfors; Irving Bank & Trust Co., 312 bls. from Hamburg; Pagel, Horton & Co., 5,700 bls. from Ornskoldsvik and 10,750 Gefle; Atterbury Bros., 350 bls. from Umea and 2,500 Oslo; Scandinavian Pulp Agency, 381 bls. from Gothenburg, 1,850 Sundsvall and 4,870 Gefle; M. Gottesman & Co., 600 bls. from Rotterdam, 150 Sundsvall and 670 Hamburg; Central National Bank, 750 bls. from Copenhagen; J. Andersen & Co., 800 bls. from Hudiksvall, 1,826 Hamburg, 9,000 Hernosand and 1,150 Stugsund; National City Bank, 175 bls. from Hamburg; Daniel M. Hicks, Inc., 339 bls. from Hamburg; Brown Bros. & Co., 2,806 bls. from Trieste; Buck, Kiaer & Co., 3,595 bls. from Oslo; Chase National Bank, 800 bls. from Oslo and 512 Hamburg; Goldman, Sachs & Co., 686 bls. from Hamburg; Price & Pierce, 1,416 bls. from Gothenburg; Order, 3,140 bls. from Kotka, 130 Koenigsberg, 2,216 Wiborg, 2,100 Raumo, 600 Hamburg, 905 Bremen and 1,200 Trondhjem.

Paper Stock

The market for imported papermaking materials rules quiet yet arrivals into the United States keep up on a fairly large scale, judging from manifests of steamers reaching the port of New York. Imports of rags in October appeared fully up to normal and some sizable shipments of old rope, bagging and other grades were received.

Imports of papermaking rags into the United States in August amounted to 43,426,298 pounds, according to official Department of Commerce statistics, making a total for the first eight months of this year of 333,078,092 pounds, against 403,407,784 pounds in the same period last year. Imports of waste bagging and waste paper in the first eight months of the current year were 81,294,394 pounds, compared with 80,378,578 pounds a year ago, while imports of old rope and miscellaneous paper stock amounted to 59,671,988 pounds, contrasted with 46,790,647 pounds in the corresponding period last year.

Imports of all kinds of paper stock other than wood pulp through the port of New York in the month of October, 1926, these data being taken from manifests of steamers arriving at that port during the month, follow:

Old Rope

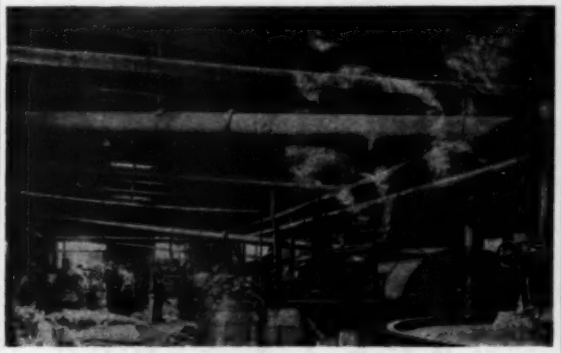
Brown Bros. & Co., 375 coils and 279 bls.; Jaffe Products Co., 8 bls.; Havana Metals Co., 50 bls.; Bulkley, Dunton & Co., 25 bls.; N. E. Berzen, 181 bls.; National City Bank, 23 bls.; Ellerman's Wilson Line, 135 coils; New York Cordage Co., 96 coils; Anglo-South American Trust Co., 42 coils; W. Schall & Co., 57 bls. and 29 coils; Harmon G. Lichtenstein, 31 bls.; S. Birkenstein & Sons, 80 coils; Amtorg Trading Co., 185 bls.; Montell & McDonough, 6 bls.; E. J. Keller Co., 184 bls.; Order, 94 bls. and 58 coils.

Old Bagging

Bulkley, Dunton & Co., 268 bls.; Carolina Bagging Co., 50 bls.; J. M. Johnson, 57 bls.; George M. Graves Co., 148 bls.; Anchor Line, 15 bls.; Darmstadt, Scott & Courtney, 338 bls.; Banca Commerciale Italiana, 40 bls.; Irving Bank & Trust Co., 260 bls.; F. B. Vandegrift & Co., 30 bls.; Brown & Roese, 42 bls.; Chatham Burlap Bag Corp., 100 bls.; E. J. Keller Co., 227 bls.; Order, 1,967 bls.

Rags

S. Silberman Co., 257 bls.; Milton Snedeker Corp., 118 bls.; Dodwell & Co., 36 bls.; A. H. Searle, Inc., 793 bls.; Bulkley,



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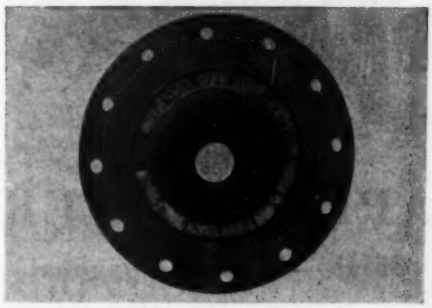
Send us your blueprints and we will gladly furnish estimates on pipe and fittings to suit your requirements.



End view of Special Flange Coupling. Note metal outside

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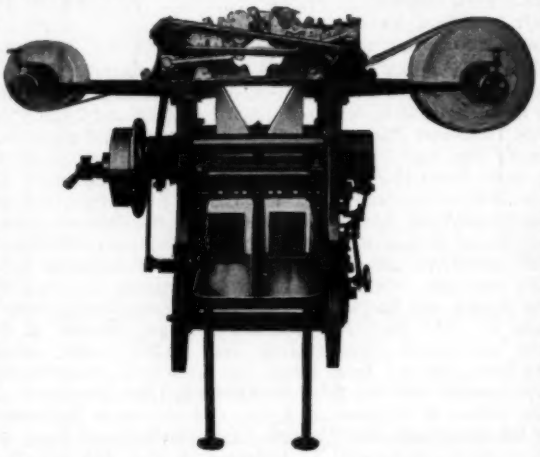

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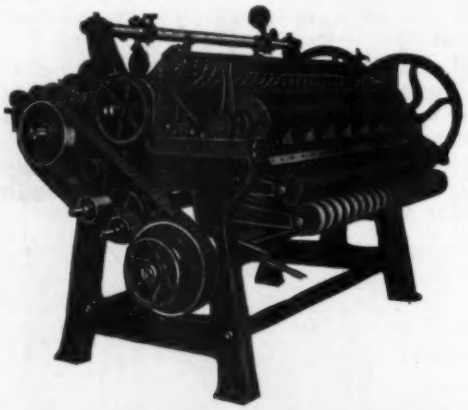

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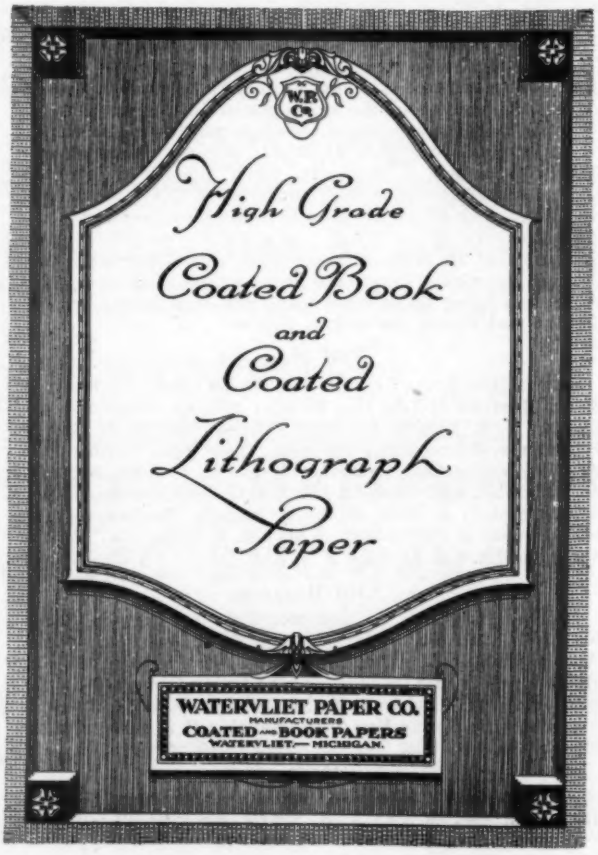

Dunton & Co., 77 bls.; J. A. Brookman & Co., 50 bls.; Victor Galaup, Inc., 93 bls.; L. H. Abenheimer, 745 bls.; Daniel M. Hicks, Inc., 160 bls.; Atlas Waste Material Co., 176 bls.; William Steck & Co.. 89 bls.; General Fiber Co., 82 bls.; E. T. Mayer, 129 bls.; Robert Blank, 359 bls.; Stone Bros. Co., 102 bls.; Albion Trading Co., 3 bls.; Daniel I. Murphy, Inc., 1,082 bls.; G. Mayer, 104 bls.; Salomon Bros. & Co., 56 bls.; Royal Mfg. Co., 64 bls.; Castle & Overton, Inc., 81 bls.; Ignazio, Abela & Co., 25 bls.; Harmon G. Lichtenstein, 153 bls.; Atterbury Bros., 42 bls.; E. Butterworth & Co., 57 bls.; E. J. Keller Co., 2,696 bls.; Romeo Canovai & Figli, 170 bls.; Chase National Bank, 447 bls.; Standard Bank of South Africa, 98 bls.; Central National Bank of Cleveland, 206 bls.; Philadelphia National Bank, 135 bls.; Anglo-South American Trust Co., 61 bls.; Bank of New York & Trust Co., 136 bls.; Chemical National Bank, 134 bls.; American Exchange-Pacific National Bank, 11 bls.; Irving Bank & Trust Co., 118 bls.; National City Bank, 37 bls.; National Bank of Commerce, 35 bls.; Banca Commerciale Italiana, 112 bls.; W. Schall & Co., 86 bls.; A. W. Fenton, Inc., 462 bls.; Amsinck, Sonne & Co., 60 bls.; The Barrett Co., 615 bls.; Brown Bros. & Co., 109 bls.; U. S. Forwarding Co., 130 bls.; A. C. Fetterolf, 113 bls.; Goldman, Sachs & Co., 116 bls.; Kidder Peabody Acceptance Corp., 50 bls.; Anglo Paper Mills, 40 bls.; Pennsylvania Railroad Co., 159 bls.; Wood, Baxter & Co., 65 bls.; American Merchant Lines, 11 bls.; Order, 2,823 bls.

Miscellaneous Paper Stock

William Steck & Co., 45 bls.; Reis & Co., 19 bls.; J. Cohen & Sons Co., 25 bls.; S. Birkenstein & Sons, 511 bls.; American Express Co., 40 bls.; Brown Bros. & Co., 54 bls.; Irving Bank & Trust Co., 109 bls.; Philadelphia Girard National Bank, 50 bls.; E. J. Keller Co., 197 bls.; Order, 535 bls.

Paper

Imports of paper into the United States during August, 1926, showed a 4 per cent gain in value as contrasted with the preceding month and 27 per cent as compared with August last year, according to official Department of Commerce statistics. Total imports in August reached a value of $12,031,280, against $11,556,091 in July this year, and $9,453,615 in August last year. Imports of standard newsprint, of course, constituted the bulk of the paper importations, receipts of that class of paper amounting in value to $10,752,126 in August, 1926, contrasted with $7,435,832 in the similar month a year ago. Imports of paper of all kinds into the U. S. during the first eight months of this year were valued at $90,805,512, compared with $78,407,791 in the corresponding period last year.

Paper imports in October kept up to a fairly high level, judging from arrivals through the port of New York. Imports of paper of all kinds last month through the port of New York, these data being taken from manifests of steamers reaching that port, follow:

Printing

Perkins-Goodwin Co., 80 reels, 113 cs. and 9 bls. from Hamburg; International Forwarding Co., 6 cs. from Hamburg and 5 cs. Bremen; United States Lines, 20 reels from Bremen; P. C. Zuhlke, 174 cs. from Antwerp and 5 cs. Rotterdam; Perry, Ryer & Co., 180 cs. from Glasgow; B. F. Drakenfeld & Co., 89 cs. from Liverpool; Bank of Montreal, 4,754 rolls from Corner Brook, N. F.; Oxford University Press, 5 cs. from Liverpool; Martin & Bechtold, 24 cs. from Bremen; Parsons & Whittemore, 458 reels from Bremen and 752 reels from Kotka; Keuffel & Esser Co., 189 rolls and 29 cs. from Hamburg; North German Lloyd, 72 reels from Bremen; E. Dietzgen & Co., 48 cs. from Rotterdam and 11 cs. Hamburg; National City Bank, 142 bls. from Bremen; Maurice O'Meara Co., 317 cs. from Bremen and 79 reels from Kotka; Box Board & Lining Co., 98 reels from Bremen; A. S. Zabriskie, Inc., 56 rolls from Bremen; W. Hartmann & Co., 29 bls. and 4 cs. from Hamburg; C. Steiner, 36 cs. from Rotterdam; Order, 479 bls., 106 cs. and 1,095 reels from Bremen and 249 reels from Kotka.

Wrapping

General Electric Co., 16 rolls from Hamburg; C. Steiner, 23 cs. from Hamburg and 5 cs. Antwerp; Bendix Paper Co., 15

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Save-Alls **Stone Bed Plates**

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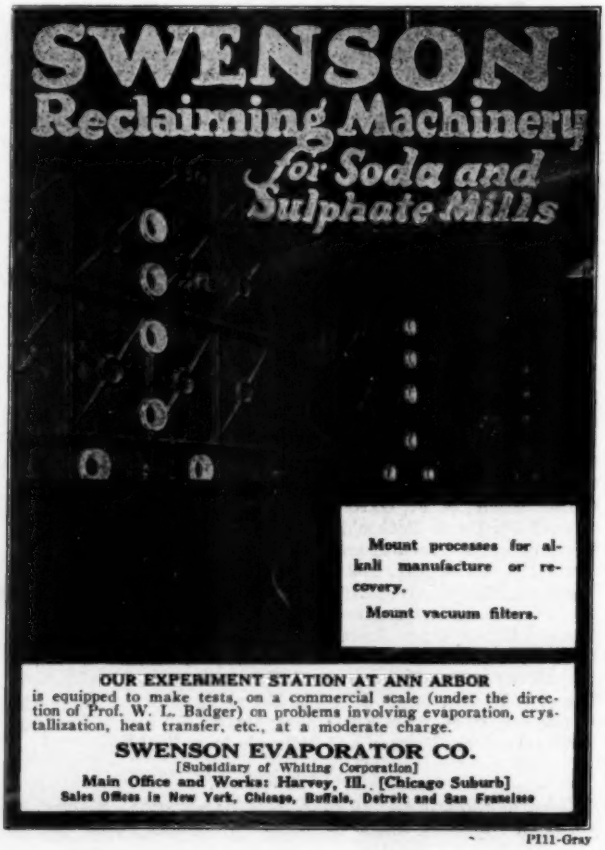

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cs. from Hamburg; Gilbert Paper Co., 132 bls. and 34 rolls from Gothenburg; Wilkinson Bros. & Co., 35 cs. from Gothenburg; M. M. Cohen, 138 reels and 82 bls. from Gothenburg; Arkell Safety Bag Co., 496 rolls from Gothenburg; F. L. Kraemer & Co., 20 bls. from Hamburg and 13 cs. Singapore; United American Lines, 20 bls. from Hamburg; D. S. Walton & Co., 1,183 reels from Gothenburg; Miller Paper Co., 302 reels from Gothenburg; Borregaard Co., 146 reels and 354 bls. from Gothenburg; C. K. MacAlpine & Co., 991 reels from Gothenburg; E. Dietzgen & Co., 8 cs. from Rotterdam; Okonite Callender Cable Co., 112 reels from London; Hudson Trading Co., 177 reels and 23 bls. from Rotterdam; Commonwealth Bank, 10 cs. from Hamburg; W. C. Sullivan & Co., 5 cs. from Hamburg; Order, 91 cs. from Antwerp and 113 bls. and 54 cs. from Hamburg.

Cigarette

Bank of the Manhattan Co., 30 cs. from Lisbon; R. J. Reynolds Tobacco Co., 400 cs. from Havre and 2,560 cs. St. Nazaire; Standard Products Corp., 562 cs. from Havre; Surbrug Co., 56 cs. from Havre; DeManduit Paper Corp., 40 cs. from St. Nazaire; American Tobacco Co., 1,700 cs. from Bordeaux; M. Spiegel & Sons, 17 cs. from Bordeaux.

Writing

Guibont Freres & Co., 25 cs. from Southampton; F. L. Kraemer & Co., 6 cs. from London; Eleto Co., 7 cs. from Southampton; Distinctive Writing Paper Co., 10 cs. from Southampton and 4 cs. Havre; J. Kennedy, 9 cs. from Havre; F. C. Strype, 18 cs. from Southampton and 10 cs. Havre; Meadows, Wye & Co., 3 cs. from London; Safepaco Paper Co., 29 cs. from Southampton; Stern Bros., 14 cs. from Havre; C. A. Redden, 4 cs. from Havre; F. Henjes, Jr., 62 rolls from Hamburg.

Drawing

Keuffel & Esser Co., 82 rolls and 121 cs. from Hamburg and 3 cs. Southampton; P. Puttmann, 14 cs. from Antwerp.

Filter

J. Manheimer, 169 bls. from Southampton; H. Reeve Angel & Co., 8 cs. from Southampton and 6 cs. London; E. Fougera & Co., 68 cs. from Southampton; C. Sleicher & Scholl Co., 11 cs. from Hamburg; A. Giese & Son, 18 bls. from Bordeaux; C. G. Euler, 26 bls. from Bordeaux; G. Gennert, 51 cs. from Havre.

Tissue

Schenkers, Inc., 111 cs. from Hamburg; J. C. Robold & Co., 10 cs. from Liverpool; Meadows, Wye & Co., 3 cs. from Liverpool; F. C. Strype, 20 cs. from Liverpool.

Hanging

C. A. Haynes & Co., 60 bls. from London and 35 bls. Southampton; Meadows, Wye & Co., 333 bls. from Hamburg; Panama-Pacific Line, 3 bls. from London; A. C. Dodman Jr. & Co., 94 bls. from Southampton and 216 bls. Liverpool; W. H. S. Lloyd & Co., 32 cs. from Liverpool; Rohner, Gehrig & Co., 347 bls. from Antwerp; G. I. Hunker & Co., 6 bls. from Hamburg; F. J. Emmerich & Co., 48 pkgs. from Liverpool, 22 cs. Southampton and 4 bls. Hamburg; Hudson Forwarding Co., 3 cs. from Southampton.

Miscellaneous

F. C. Strype, 212 cs. from Hamburg; Pennsylvania Railroad Co., 38 cs. from Hamburg; J. J. Henchel & Co., 19 cs. from Hamburg; D. C. Andrews & Co., 97 cs. from Hamburg; Quality Art Novelty Co., 22 cs. from Hamburg; T. F. Wilmot & Co., 13 cs. from Southampton; Whiting-Patterson Co., 27 cs. from Southampton and 14 cs. London; J. Raber, 7 cs. from Bristol; Rohner, Gehrig & Co., 62 reels from Hamburg; Louis DeJonge Co., 171 rolls from Gothenburg and 20 cs. Hamburg; Bernard, Judae & Co., 6 cs. from Gothenburg; Keller-Dorrian Paper Co., 64 cs. from Southampton and 17 cs. Havre; J. H. & G. B. Seibold, 10 cs. from Shanghai; McKinley & Co., 15 cs. from Shanghai; R. F. Downing & Co., 7 cs. from Havre; Globe Shipping Co., 7 cs. from Rotterdam; J. E. Bernard & Co., 6 cs. from Gothenburg and 29 bls. Antwerp; F. L. Kraemer & Co., 3 cs. from London; H. Reeve Angel & Co., 16 cs. from London; Hensel, Bruckman & Lorbacher, 8 cs. from Bremen; R. W. Granert, 6 cs. from Hamburg; Bendix Paper Co., 7 cs. from

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High Speed Beaters

NOT long ago the Clifton Paper Mills of Passaic, N. J., ordered a Dayton High Speed Beater. Immediately after the installation of this first beater they placed an order for additional high speed equipment.

Likewise, The Robert Gair Company, Thames River Division, New London, Conn., ordered a Dayton. A few weeks after it started operation they also placed an order for additional high speed equipment.

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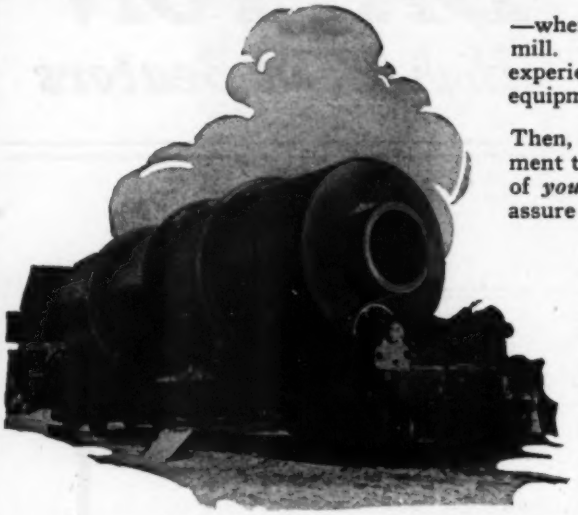

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506 CROSBY BLDG. BUFFALO, N. Y.

NEW YORK OFFICE: 95 LIBERTY STREET

Hamburg; Causon & Montgolfer, 46 cs. from Havre; Hoboken Trust Co., 6 cs. from Bremen; Flaman Sales Agency, 8 cs. from Havre; Kadin Bros., 10 cs. from Havre; Sanderson & Co., 4 cs. from Southampton; Stern Bros., 2 cs. from Havre; L. Bamberger & Co., 3 cs. from Havre; Houbigant, Inc., 37 cs. from Southampton; Bernard D'Ugo, 9 bls. from Genoa; General Electric Co., 6 cs. from Genoa; C. B. Richard & Co., 4 cs. from Bremen; Japan Paper Co., 166 cs. from Bremen, 18 cs. Rotterdam, 12 cs. Havre, 58 cs. Genoa and 6 cs. Southampton; P. H. Petry & Co., 19 cs. from Rotterdam and 22 cs. Hamburg; International Forwarding Co., 9 cs. from Hamburg and 10 cs. Rotterdam; Heemsoth, Basse & Co., 138 pkgs. from Rotterdam; S. Gilbert, 42 cs. from Rotterdam; Public National Bank, 13 cs. from Marseilles; Tamm & Co., 9 cs. from Rotterdam; Herrmann Paper Co., 12 cs. from Hamburg; G. W. Sheldon & Co., 11 cs. from Havre; Favor, Ruhl & Co., 5 cs. from Southampton; 4 cs. Havre and 6 cs. Genoa; The Reiser Co., 9 cs. from Kobe; Whitfield Paper Works, 32 cs. from Kobe.

Board

Metropolitan Import & Mfg. Co., 102 cs. from Hamburg, 10 cs. Rotterdam and 12 cs. Bremen; Bendix Paper Co., 52 cs. from Hamburg, 78 cs. Rotterdam and 35 cs. Bremen; New York Label & Box Works, 4 cs. from Hamburg; International Forwarding Co., 11 cs. from Hamburg; J. P. Heffernan Paper Co., 1,044 reels from Rotterdam; Adrian Vuyck, 2,872 rolls from Rotterdam; First National Bank of Brooklyn, 182 reels from Rotterdam; Coty, Inc., 18 cs. from Havre; Republic Bag & Paper Co., 24 cs. from Trieste; Fibre Products Mfg. Co., 8 bls. from Gothenburg; H. H. Ayer, 17 cs. from Havre; Haas Bros., Inc., 358 reels from Rotterdam; Hensel, Bruckman & Lorbacher, 3 cs. from Hamburg; Lowy & Lowy, Inc., 3 bls. from Gothenburg; Perkins-Goodwin Co., 314 rolls from Rotterdam; Insulating Co. of America, 8 cs. from Rotterdam; Schiffenhaus Bros., 100 reels from Rotterdam; Order, 17 reels from Rotterdam and 115 bls. Hamburg.

Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce may be obtained from the Bureau in Washington, D. C., or its branch offices. It is requested that the number of the inquiry be given at all times.

No. 22438—Box board. Asuncion, Paraguay. Purchase and agency desired.

No. 22411—Carton board for making advertising signs, and black cardboard ⅛-inch thick, punched. Sydney, Australia. Purchase desired.

No. 22430—Cartons or wrappers for packing dried fruit. Melbourne, Australia. Purchase desired.

No. 22403—Paper articles, such as drinking cups, picnic outfits and similar articles. Rio de Janeiro, Brazil. Agency desired.

No. 22443—Paper and paper products. Victoria, Brazil. Purchase and agency desired.

No. 22431—Wall papers. Wellington, New Zealand. Agency desired.

No. 22403—Stationery. Rio de Janeiro, Brazil. Agency desired.

No. 22374—Roofing material and wall board. Budapest, Hungary. Purchase or agency desired.

No. 22431—Roofing paper, in roll or piece. Wellington, New Zealand. Agency desired.

No. 22365—Bleaching powder. Hamburg, Germany. Purchase desired.

No. 22371—Sulphur. Glasgow, Scotland. Agency desired.

No. 22546—Sulphate of alumina and papermaking chemicals. Montreal, Canada. Purchase desired.

No. 22546—Papermaking machinery. Montreal, Canada. Purchase desired.

No. 22510—Cigarette paper on spools in two widths. St. Michaels, Azores. Purchase desired.

No. 22512—Crepe paper, and stationery. Mexico City, Mexico. Agency desired.

No. 22511—Note and writing papers. Karachi, India. Purchase and agency desired.

For hard usage
—a Jenkins Selclo Valve

Sectional View Fig. 357, Jenkins Bronze Selclo Valve

There are places where valves are operated frequently by many different people, often careless and hurried.

For this type of hard use, the Jenkins Selclo Valve is specially designed and constructed. When the handwheel is turned to the *left*, the spindle pushes the disc-holder off the seat, and opens the valve.

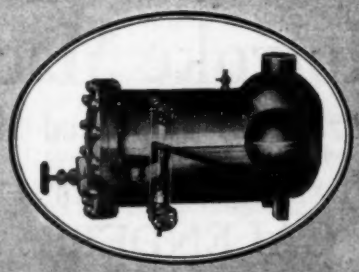
When the handwheel is turned to the *right*, the spindle is released from the disc-holder and the spring forces the disc-holder to the seat. Pressure holds the valve closed. At supply houses everywhere.

JENKINS BROS.

80 White Street ....New York, N. Y.
524 Atlantic Avenue....Boston, Mass
133 No. Seventh St..Philadelphia, Pa.
646 Washington Blvd....Chicago, Ill.

JENKINS BROS., LIMITED
Montreal, Canada London, England

Always marked with the "Diamond"
Jenkins Valves
SINCE 1864



THE two cone valves of the Davis Steam Trap adjust themselves automatically for any rate of flow required, and are balanced, so that this trap works equally well under any pressure. Since the valves are balanced, one adjustment serves for the life of the valves; once set, they will remain accurate and tight closing until worn to the point of replacement.

Particularly useful for installations where a large reserve capacity is required in draining condensate. This Davis Trap stands up under the most difficult service conditions with typical Davis performance.

Send for the Davis catalogue and get the full description. Compare the ratings and the cost and you will see the advantages of Davis Traps.

G. M. DAVIS REGULATOR CO.
422 Milwaukee Avenue Chicago, Illinois

DAVIS VALVE SPECIALTIES
STEAM-SAVERS SINCE 1875
VALVE MAKERS FOR OVER FIFTY YEARS

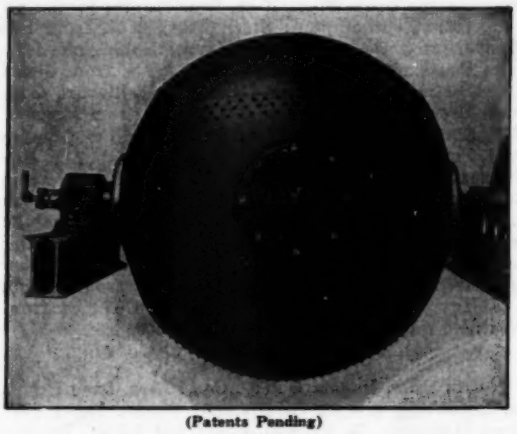
Pitt-Gray

Biggs Leadership

FOR 39 years Biggs Globe and Cylinder Bleaching Boilers have been universally used in the manufacture of paper, pasteboard and other products.

They are built in a variety of diameters and lengths, fitting them to the requirements of all kinds of plants, producing all grades of stocks, and designed to resist successfully the corrosion of such elements as lime, bleaching chemicals, etc.

Complete line described in the Biggs Rotary Book. Send for it today.



(Patents Pending)

THE BIGGS BOILER WORKS COMPANY
Seneca Place and Case Ave.
Akron, Ohio

(See page 322 in the 1926 Paper and Pulp Mill Catalogue)

The Biggs Boiler Works Co. Akron Ohio Est 1887 Trade Mark Registered

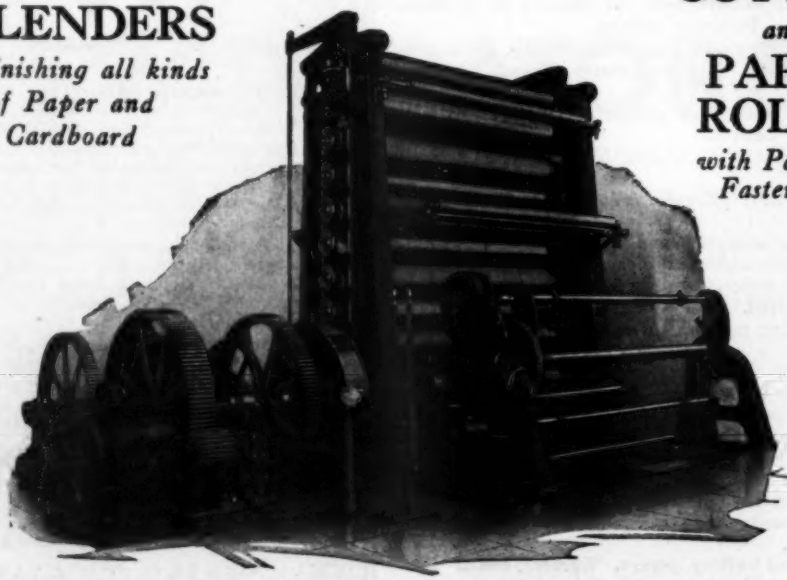
GLOBE and CYLINDER
ROTARY BLEACHING BOILERS
for Years of Dependable Cooking and Bleaching

Holyoke Machine Co., Holyoke, Mass.

Makers of Improved Machinery for Wood Pulp and Paper Mills

LARGEST MAKERS *of*
CALENDERS
for finishing all kinds of Paper and Cardboard

COTTON *and* PAPER ROLLS
with Patented Fastenings



Platers, Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters

Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors